

The Sensei Learning System for Mastering Intermediate Algebra

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1. $-1 - 4$

1. $-2 - 7$

1. $-12 - 20$

1. $-124 - 200$

2. $-1 + 4$

2. $-2 + 7$

2. $-12 + 20$

2. $-124 + 200$

3. $1 + 4$

3. $2 + 7$

3. $12 + 20$

3. $124 + 200$

4. $1 - 4$

4. $2 - 7$

4. $12 - 20$

4. $124 - 200$

5. $-5 - 4$

5. $-9 - 7$

5. $-71 - 25$

5. $-553 - 300$

6. $-5 + 4$

6. $-9 + 7$

6. $-71 + 25$

6. $-553 + 300$

7. $5 + 4$

7. $9 + 7$

7. $71 + 25$

7. $553 + 300$

8. $5 - 4$

8. $9 - 7$

8. $71 - 25$

8. $553 - 300$

9. $-8 + 8$

9. $-7 + 7$

9. $-48 + 48$

9. $-489 + 489$

10. $-8 + 9 - 2$

10. $-7 + 15 - 9$

10. $-48 + 71 - 30$

10. $-489 + 500 - 50$

11. $-8 + 9 + 2$

11. $-7 + 15 + 9$

11. $-48 + 71 + 30$

11. $-489 + 500 + 50$

Simplify using the operator

1. $-1 - 4 + 5 - 9 + 8$

1. $-1 + 5 - 6 - 7 + 8 - 9$

1. $-9 + 8 - 7 + 6 + 1$

2. $-1 + 4 + 5 - 9 - 8$

2. $-1 - 5 - 6 + 7 + 8 - 9$

2. $-9 + 8 + 7 + 6 - 1$

3. $-(-2) + (-5) - (-2)$

3. $-(-4) + (-11) - (-6)$

3. $-(-7) + (-7) - (-7)$

4. $-1 + (-2) - (-5) - (-2)$

4. $-1 + (-5) - (-11) + (-9)$

4. $-1 - 7 - (-3) - (-4)$

5. $-9 + (-2) - (-5) - (-3)$

5. $-2 + (-3) - (-9) + (-2)$

5. $-1 - 2 - (-9) - 4$

Expand and simplify

[1.2]

6. 3^2

6. 5^2

6. 9^2

7. 3^3

7. 4^3

7. 5^3

8. -2^2

8. -2^3

8. -3^3

9. -5^2

9. -5^3

9. -4^3

10. $(-5)^3$

10. $(-2)^3$

10. $(-3)^3$

11. $(-5)^2$

11. $(-2)^2$

11. $(-3)^2$

12. $-(-5)^2$

12. $-(-2)^4$

12. $-(-3)^3$

Evaluate

1. $20 + 3(-2)(-1)$

1. $25 + 2(2)(-2)$

1. $30 + 3(-1)(2)$

2. $20 - 3(-2)(-1)$

2. $25 - 2(2)(-2)$

2. $30 - 3(-1)(2)$

3. $-12 + 3(-2)(-1)$

3. $-15 + 2(2)(-2)$

3. $-20 + 3(-1)(2)$

4. $-12 - 3(-2)(-1)$

4. $-15 - 2(2)(-2)$

4. $-20 - 3(-1)(2)$

5. $20 - 3(2)^2$

5. $25 - 2(3)^2$

5. $30 - 3(3)^2$

6. $-20 - 3(-2)^2$

5. $-25 - 2(-3)^2$

6. $-30 - 3(-3)^2$

7. $20 - 3(2)^2$

7. $25 - 2(3)^2$

7. $30 - 3(3)^2$

8. $3(2)^3 - 3(2)^2$

8. $2(3)^3 - 5(3)^2$

8. $2(2)^3 - 5(2)^2$

Evaluate

9. $-2(-2)^2 - 3(-2)^2$

9. $-3(-1)^2 - 2(-2)^2$

9. $-1(-2)^2 - 5(-2)^2$

10. $-2(3)^2 - 2(-3)^2$

10. $-3(2)^2 - 3(-3)^2$

10. $-4(2)^2 - 3(-2)^2$

11. $-4(3)^2 - 2(-3)^2$

11. $-3(2)^2 - 1(-3)^2$

11. $-4(-2)^2 - 3(2)^2$

12. $-4(3)^2 + 2(-3)^2$

12. $-3(2)^2 + 1(-3)^2$

12. $-4(-2)^2 + 3(2)^2$

13. $4(-2)^2 - 2(-3)^2$

13. $3(-2)^2 - 1(-3)^2$

13. $4(-2)^2 - 3(-2)^2$

Unit I. Substitution and Simplifying

[3.1]

Evaluate given: $x = 2$, $y = -2$, $z = 3$, $w = -3$

1. $3x^3 - 2z^2$

1. $4x^3 - 3z^2$

1. $2x^3 - 4z^2$

2. $-3x^3 - 3y^2$

2. $-2x^3 - 2y^2$

2. $-3x^3 - 2y^3$

3. $-3y^3 - 3z^2$

3. $-2y^3 - 2z^2$

3. $-y^2 - 3z^3$

evaluate given: $x = 2$, $y = -2$, $z = 3$, $w = -3$

4. $-3y^3 - w^3$

4. $-2y^3 - 3w^2$

4. $-y^3 - 2w^2$

5. $-2z^2 - 2w^2$

5. $-x^2 - w^3$

5. $-3x^3 - 2z^3$

6. $y^2 - 2x^2 - 2z^2$

6. $-w^3 - z^2 - y^2$

6. $-y^2 - 3y^2 + w^2$

Solve for y given x :

1. $y = 2x^2 + 3x + 4, x = 1$ 1. $y = 3x^2 + 2x + 4, x = 1$ 1. $y = 3x^2 + 4x + 2, x = 1$

2. $y = 2x^2 + 3x + 4, x = -1$ 2. $y = 3x^2 + 2x + 4, x = -1$ 2. $y = 3x^2 + 4x + 2, x = -1$

3. $y = 2x^2 + 3x + 4, x = -2$ 3. $y = 3x^2 + 2x + 4, x = -2$ 3. $y = 3x^2 + 4x + 2, x = -2$

Solve for y given x :

[4.2]

1. $y = -2x^2 + 3x + 4, x = 1$ 1. $y = -3x^2 + 2x + 4, x = 1$ 1. $y = -3x^2 + 4x + 2, x = 1$

2. $y = -2x^2 + 3x + 4, x = -1$ 2. $y = -3x^2 + 2x + 4, x = -1$ 2. $y = -3x^2 + 4x + 2, x = -1$

3. $y = -2x^2 + 3x + 4, x = -2$ 3. $y = -3x^2 + 2x + 4, x = -2$ 3. $y = -3x^2 + 4x + 2, x = -2$

Solve for y given x :

[4.3]

1. $y = -2x^2 - 3x - 4, x = 1$ 1. $y = -3x^2 - 2x - 4, x = 1$ 1. $y = -3x^2 - 4x - 2, x = 1$

2. $y = -2x^2 - 3x - 4, x = -1$ 2. $y = -3x^2 - 2x - 4, x = -1$ 2. $y = -3x^2 - 4x - 2, x = -1$

3. $y = -x^2 + x - 10, x = -2$ 3. $y = -x^2 + x - 1, x = -2$ 3. $y = -x^2 + x - 5, x = -2$

Solve for x: repeat problem, show all steps

1. $x + 6 = 13$

1. $x + 3 = 14$

1. $x + 1 = 7$

2. $10 = x + 4$

2. $12 = x + 5$

2. $9 = x + 1$

3. $x - 4 = 10$

3. $x - 3 = 7$

3. $x - 1 = 8$

4. $10 = x - 4$

4. $12 = x - 1$

4. $9 = x - 11$

5. $8 + x = 10$

5. $5 + x = 9$

5. $9 + x = 10$

6. $10 = 7 + x$

6. $12 = 4 + x$

6. $9 = 7 + x$

Solve for x: repeat problem, show all steps

7. $x + 6 = -13$

7. $x + 3 = -14$

7. $x + 1 = -7$

8. $-10 = x + 4$

8. $-12 = x + 5$

8. $-9 = x + 1$

9. $x - 4 = -10$

9. $x - 3 = -7$

9. $x - 1 = -8$

10. $-10 = x - 4$

10. $-12 = x - 1$

10. $-9 = x - 11$

11. $8 + x = -10$

11. $5 + x = -9$

11. $9 + x = -10$

12. $-10 = 7 + x$

12. $-12 = 4 + x$

12. $-9 = 7 + x$

Solve for x : repeat problem, show all steps

13. $-8 + x = -10$

13. $-5 + x = -9$

13. $-9 + x = -10$

14. $-10 = -7 + x$

14. $-12 = -4 + x$

14. $-9 = -7 + x$

15. $-8 + x = -2$

15. $-5 + x = -3$

15. $-9 + x = -4$

16. $-5 = -7 + x$

16. $-3 = -4 + x$

16. $-4 = -7 + x$

17. $-8 + x = 10$

17. $-5 + x = 9$

17. $-9 + x = 10$

18. $10 = -7 + x$

18. $12 = -4 + x$

18. $9 = -7 + x$

Solve for x: repeat problem, show all steps

1. $3x = 15$

1. $7x = 14$

1. $5x = 20$

2. $36 = 9x$

2. $35 = 7x$

2. $40 = 8x$

3. $4x = -44$

3. $6x = -42$

3. $2x = -20$

4. $72 = \frac{8}{3}x$

4. $24 = \frac{3}{2}x$

4. $36 = \frac{4}{3}x$

5. $-\frac{4}{5}x = -12$

5. $-\frac{5}{3}x = -10$

5. $-\frac{3}{7}x = -12$

6. $-72 = -\frac{9}{2}x$

6. $-18 = -\frac{3}{8}x$

6. $-55 = -\frac{5}{3}x$

Solve for x: repeat problem, show all steps

7. $3x + 4 = 19$

7. $7x + 1 = 15$

7. $5x + 7 = 27$

8. $39 = 9x + 3$

8. $40 = 7x + 5$

8. $48 = 8x + 8$

9. $3x - 4 = 11$

9. $7x - 1 = 13$

9. $5x - 7 = 13$

10. $28 = 9x - 8$

10. $31 = 7x - 4$

10. $30 = 8x - 10$

Solve for x : repeat problem, show all steps

11. $3 = 1 + \frac{1}{2}x$

11. $4 = 1 + \frac{1}{3}x$

11. $5 = 1 + \frac{1}{4}x$

12. $5 = \frac{3}{2}x - 7$

12. $7 = \frac{2}{3}x - 5$

12. $13 = \frac{4}{5}x - 3$

13. $\frac{1}{2}x + 4 = 7$

13. $\frac{1}{3}x + 2 = 9$

13. $\frac{1}{4}x + 1 = 4$

Solve for x: repeat problem, show all steps

1. $5x - 5 = 3x + 7$

1. $7x - 4 = 5x + 8$

1. $4x - 8 = 2x + 4$

2. $-x - 14 = -2x - 16$

2. $-2x - 10 = -3x - 12$

2. $-3x - 16 = -4x - 18$

3. $-14 - 3x = -16 - 2x$

3. $-15 - 4x = -17 - 3x$

3. $-8 - 5x = -10 - 4x$

Solve for x: repeat problem, show all steps

4. $-16 - 5x = -14 - 4x$

4. $-10 - 6x = -8 - 5x$

4. $-20 - 4x = -18 - 3x$

5. $2x - 5 = -6x + 7$

5. $3x - 4 = -5x + 8$

5. $4x - 7 = -4x + 5$

6. $-5x + 13 = -17 - 10x$

6. $-2x + 14 = -16 - 7x$

6. $-9x + 10 = -20 - 14x$

Solve for x: repeat problem, show all steps

$$1. 4x - 10 - 10x = 2 + 6x - 12 \quad 1. 2x - 5 - 5x = 1 + 3x - 6 \quad 1. 9x - 4 - 5x = 2 + 8x - 6$$

$$2. 8 - 4x - 12 = -6x + 14 - 4x \quad 2. 4 - 2x - 6 = -3x + 7 - 2x \quad 2. 9 - 4x - 1 = -4x + 17 - 3x$$

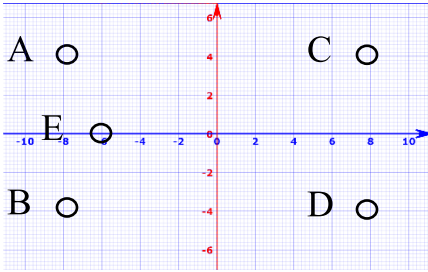
Solve for x : repeat problem, show all steps

$$3. -2 - 28 + 4x = 14 + 4x - 8x \quad 3. -1 - 14 + 2x = 7 + 2x - 4x \quad 3. -3 - 16 + 7x = 3 + 5x - 2x$$

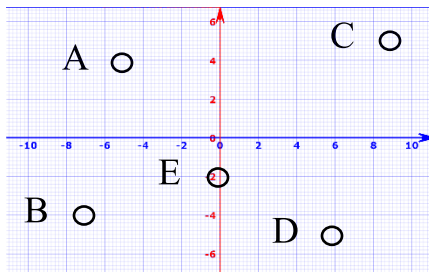
$$4. 18 - 4x - 22 = 6x + 14 - 4x \quad 4. 9 - 2x - 11 = 3x + 7 - 2x \quad 4. 8 - 7x - 22 = 2x - 3 - 4x$$

Give the coordinates for the labeled points on the graph

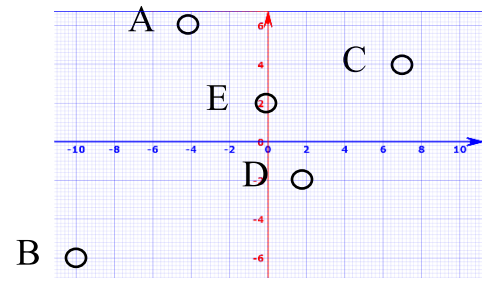
1. A(,)
 B(,)
 C(,)
 D(,)
 E(,)



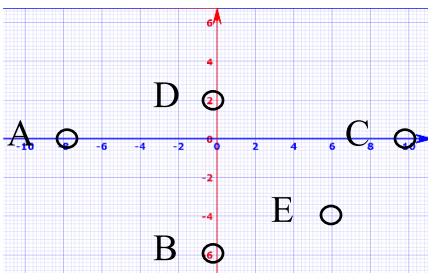
1. A(,)
 B(,)
 C(,)
 D(,)
 E(,)



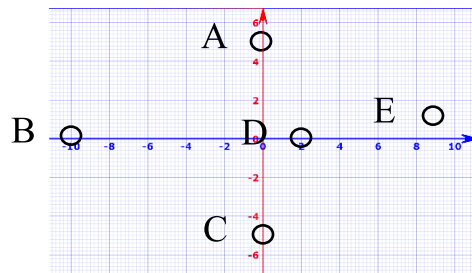
1. A(,)
 B(,)
 C(,)
 D(,)
 E(,)



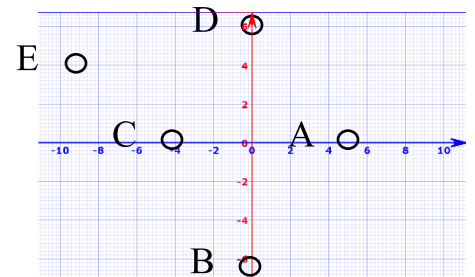
2. A(,)
 B(,)
 C(,)
 D(,)
 E(,)



2. A(,)
 B(,)
 C(,)
 D(,)
 E(,)

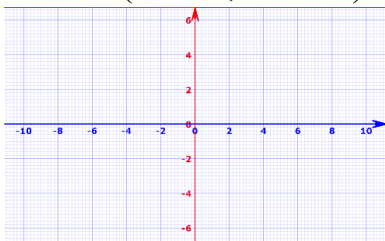


2. A(,)
 B(,)
 C(,)
 D(,)
 E(,)

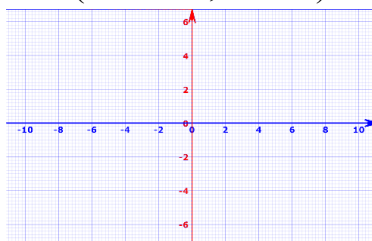


Graph and label the given coordinates

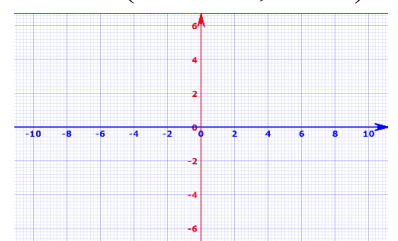
3. A(10 , 2)
 B(-6 , 5)
 C(5 , -6)
 D(-1 , -1)
 E(0 , 4)



3. A(5 , 5)
 B(5 , -5)
 C(-5 , -5)
 D(-5 , 5)
 E(0 , -2)

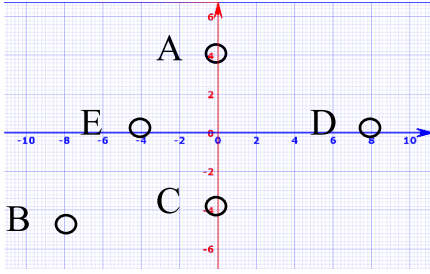


3. A(8 , 0)
 B(0 , 6)
 C(-8 , 0)
 D(0 , -6)
 E(1 , 1)

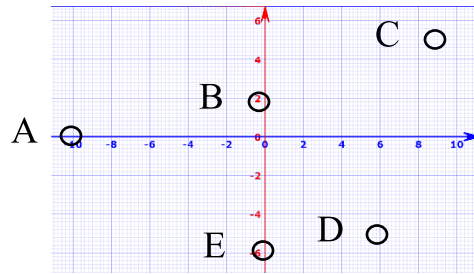


Give the coordinates for the labeled points on the graph

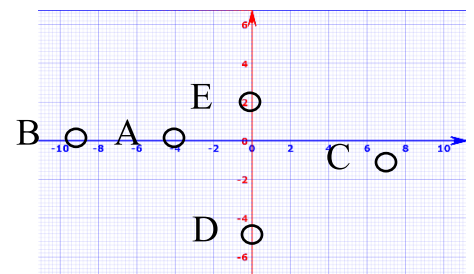
4. A(,)
 B(,)
 C(,)
 D(,)
 E(,)



4. A(,)
 B(,)
 C(,)
 D(,)
 E(,)

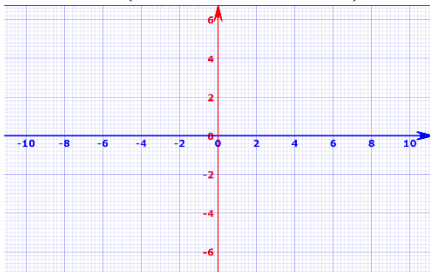


4. A(,)
 B(,)
 C(,)
 D(,)
 E(,)

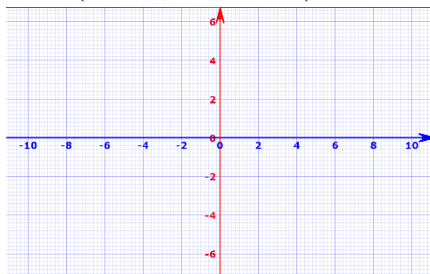


Graph and label the given coordinates

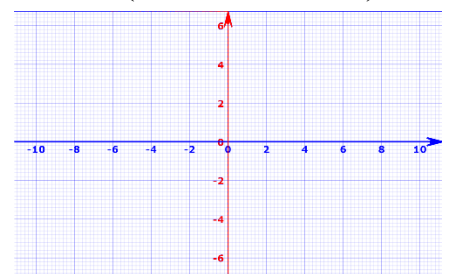
5. A(0 , 8)
 B(0 , -8)
 C(5 , 0)
 D(-5 , 0)
 E(0 , 0)



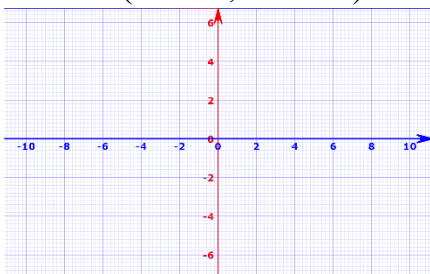
5. A(0 , 5)
 B(0 , -5)
 C(0 , 0)
 D(-5 , 0)
 E(5 , 0)



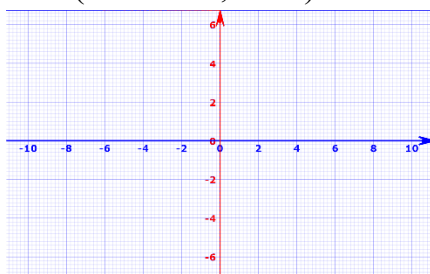
5. A(0 , 0)
 B(6 , 0)
 C(-6 , 0)
 D(0 , 4)
 E(0 , -4)



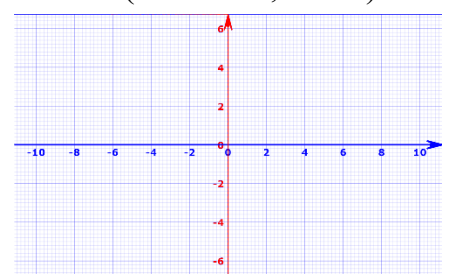
6. A(0 , 2)
 B(3 , -3)
 C(0 , -6)
 D(-1 , 0)
 E(0 , 4)



6. A(0 , 5)
 B(5 , 0)
 C(0 , -5)
 D(-5 , 0)
 E(-3 , 3)



6. A(8 , 0)
 B(0 , 5)
 C(-8 , 0)
 D(0 , -5)
 E(-3 , -3)



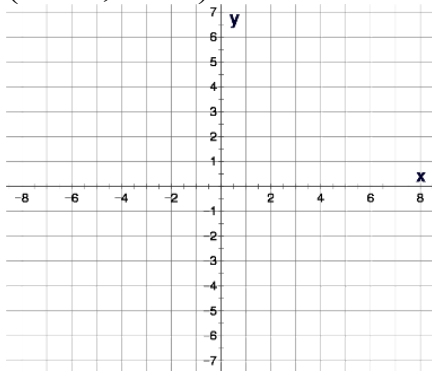
Write slope and y-intercept and graph and label points

1. $y = \frac{2}{3}x - 5$

m =

(,)

(,)

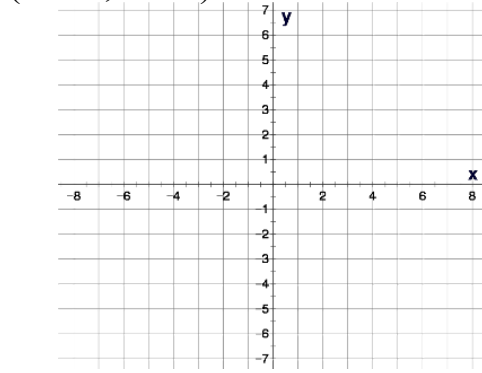


1. $y = \frac{5}{2}x - 4$

m =

(,)

(,)

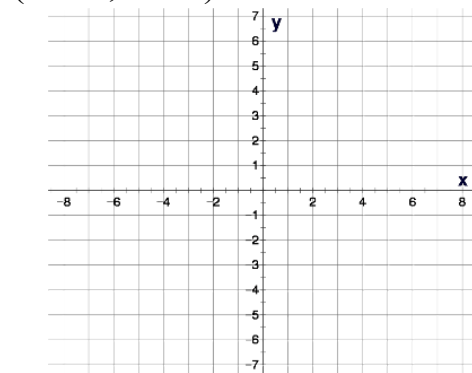


1. $y = \frac{3}{5}x - 1$

m =

(,)

(,)

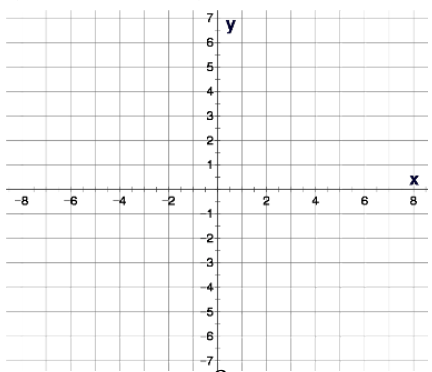


2. $y = -\frac{1}{4}x + 2$

m =

(,)

(,)

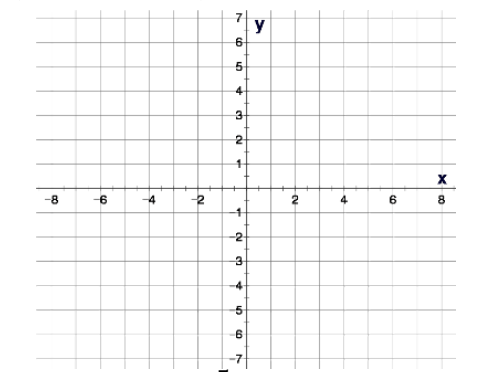


2. $y = -\frac{5}{2}x + 4$

m =

(,)

(,)

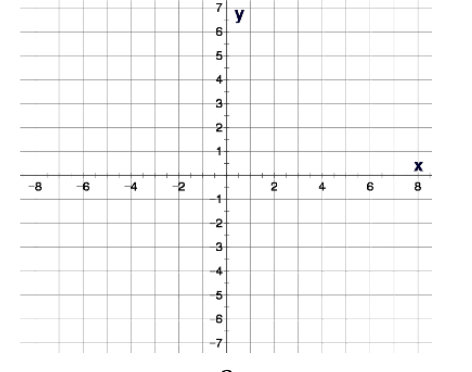


2. $y = -\frac{3}{5}x + 1$

m =

(,)

(,)

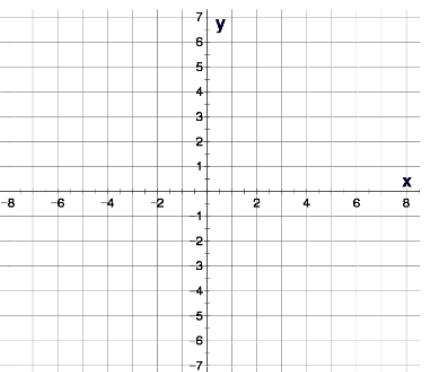


3. $y = -\frac{3}{4}x - 3$

m =

(,)

(,)

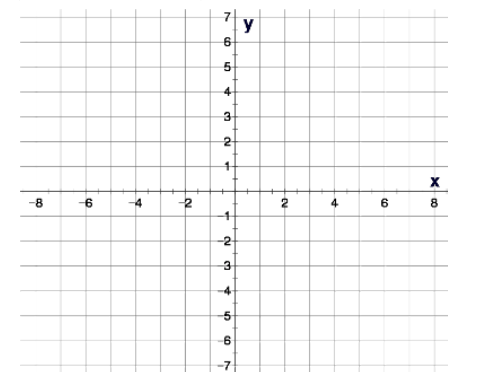


3. $y = -\frac{5}{3}x - 2$

m =

(,)

(,)

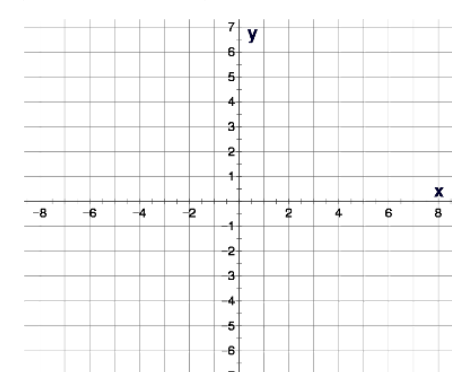


3. $y = -\frac{3}{4}x - 1$

m =

(,)

(,)



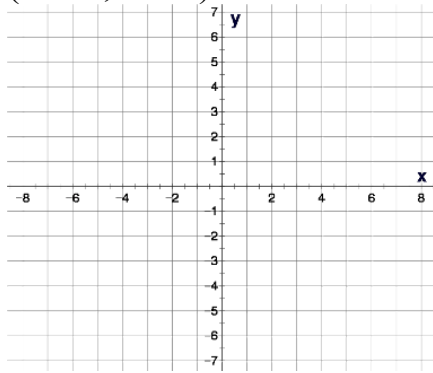
Write slope and y-intercept and graph and label points

4. $y = \frac{5}{3}x$

m =

(,)

(,)

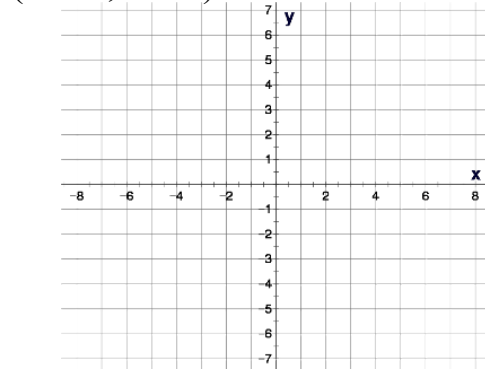


4. $y = \frac{7}{4}x$

m =

(,)

(,)

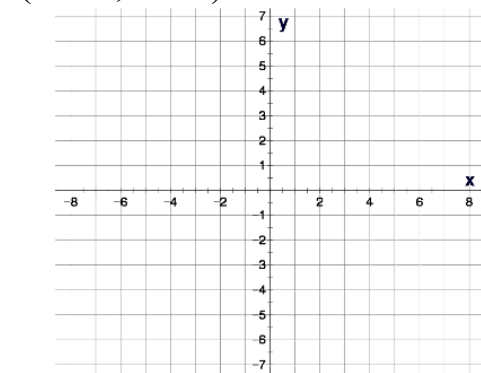


4. $y = \frac{3}{2}x$

m =

(,)

(,)

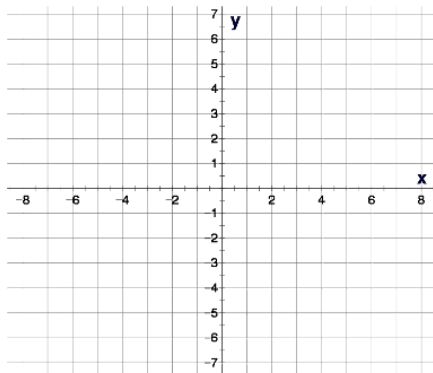


5. $y = 3x$

m =

(,)

(,)

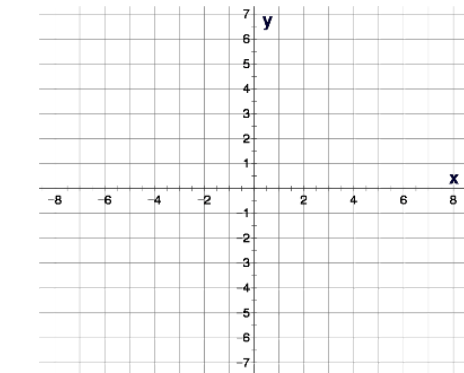


5. $y = 4x$

m =

(,)

(,)

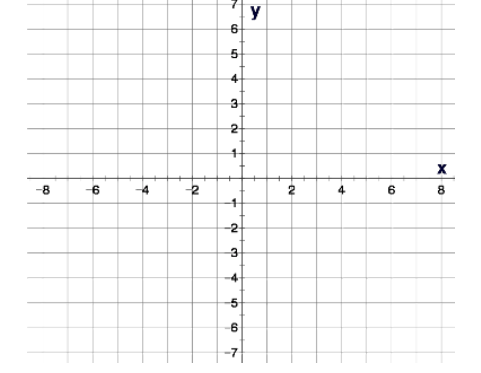


5. $y = 5x$

m =

(,)

(,)

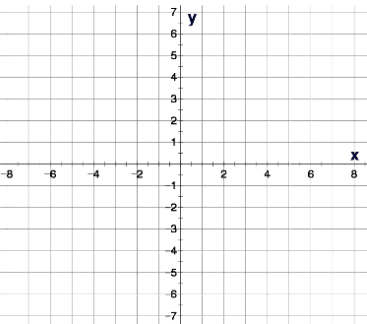


6. $y = -3x$

m =

(,)

(,)

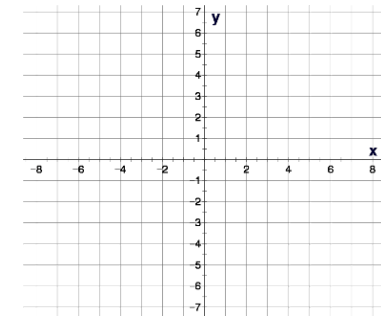


6. $y = -4x$

m =

(,)

(,)

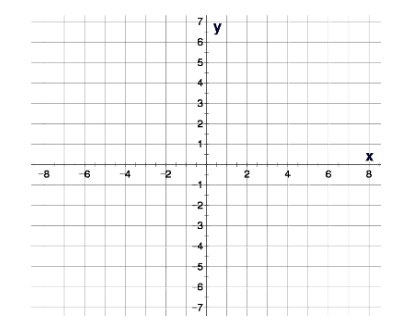


6. $y = -5x$

m =

(,)

(,)



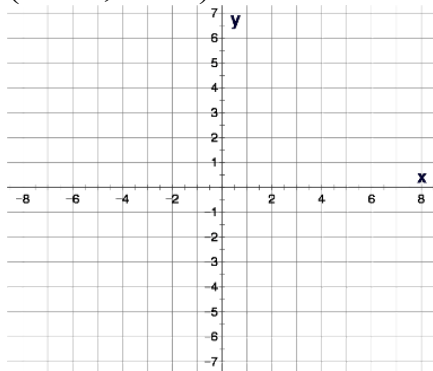
Write slope and y-intercept and graph and label points

7. $y = x - 5$

m =

(,)

(,)

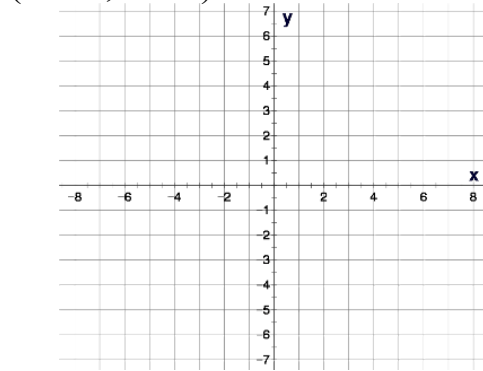


7. $y = x - 4$

m =

(,)

(,)

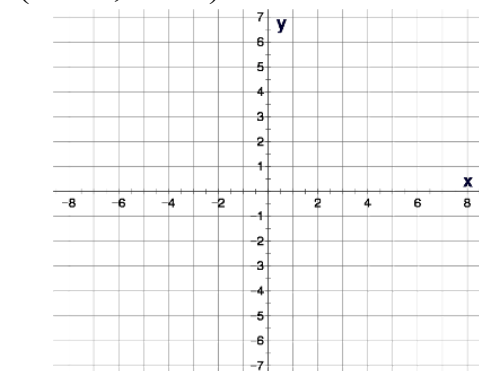


7. $y = x + 2$

m =

(,)

(,)

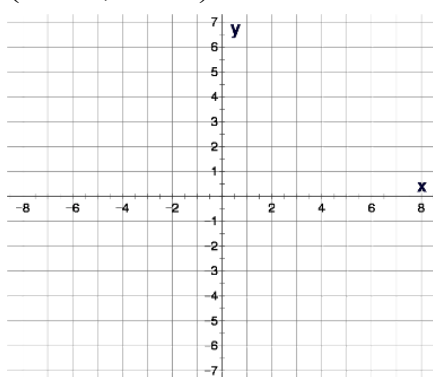


8. $y = x + 5$

m =

(,)

(,)

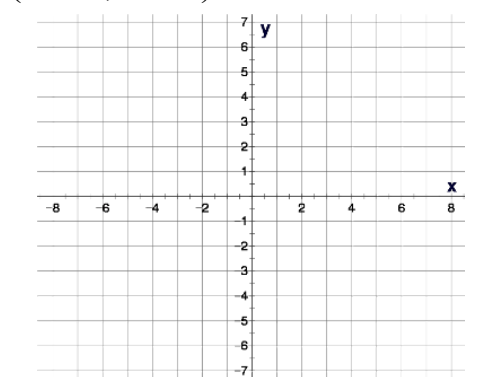


8. $y = x + 4$

m =

(,)

(,)

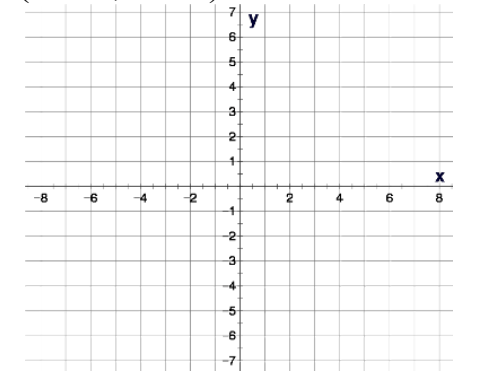


8. $y = x - 2$

m =

(,)

(,)

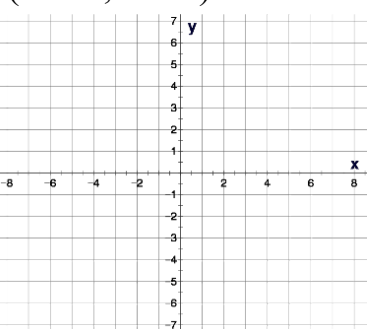


9. $y = 4 - 3x$

m =

(,)

(,)

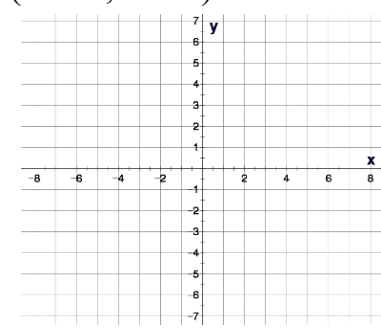


9. $y = 3 - 4x$

m =

(,)

(,)

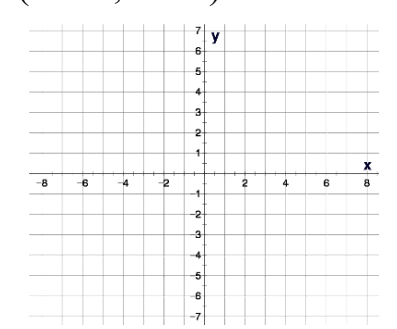


9. $y = 5 - 2x$

m =

(,)

(,)



Write in slope, y-intercept form and graph

1. $2x + 3y = 15$

1. $3x + 4y = 12$

1. $-4x + 5y = -30$

m =

(,)

(,)

m =

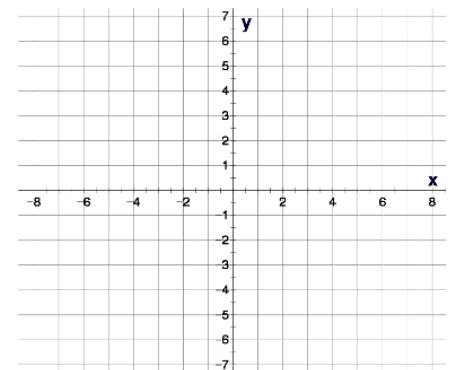
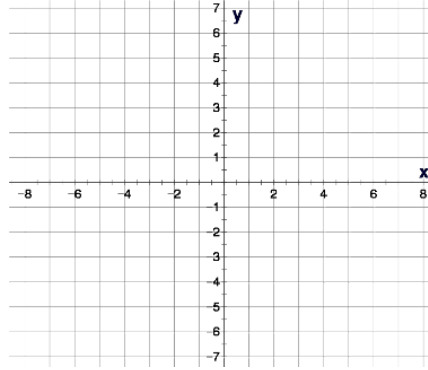
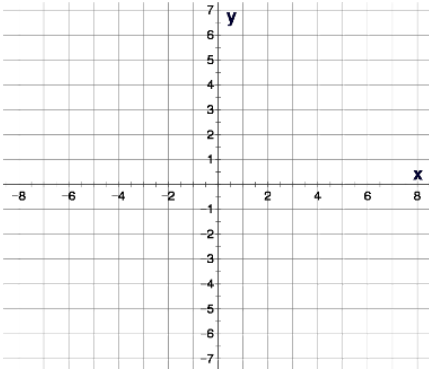
(,)

(,)

m =

(,)

(,)



2. $5x - 3y = 18$

2. $2x - 5y = 20$

2. $4x - 3y = 18$

m =

(,)

(,)

m =

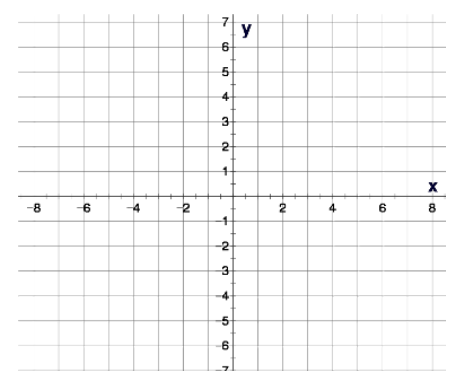
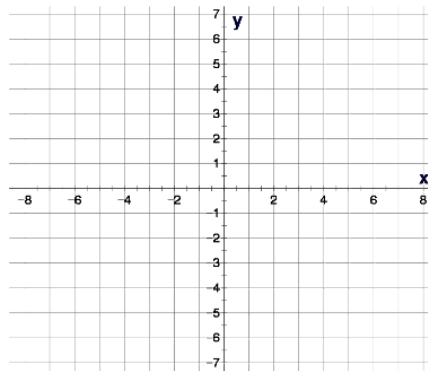
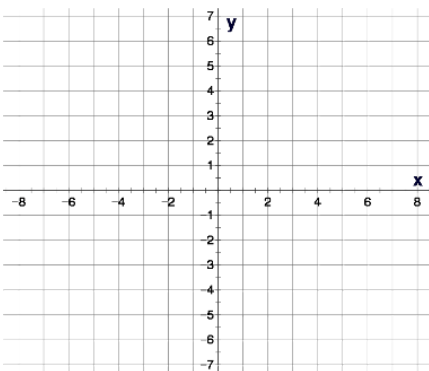
(,)

(,)

m =

(,)

(,)



Write in slope, y-intercept form and graph

3. $-8x - 3y = -18$

3. $-5x - 4y = -24$

3. $-4x - 5y = -40$

m =

(,)

(,)

m =

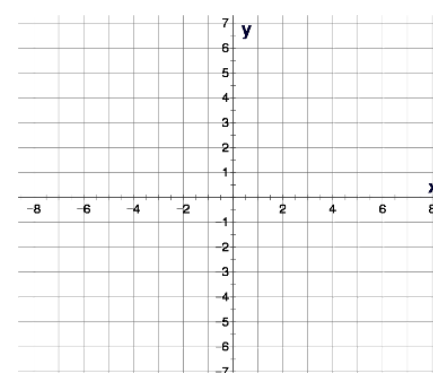
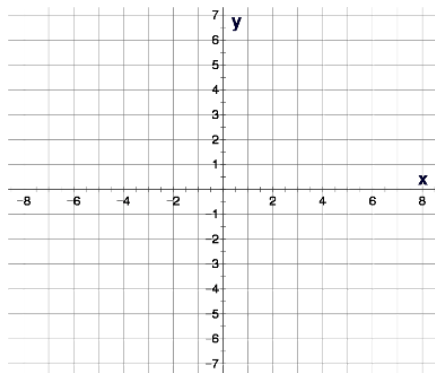
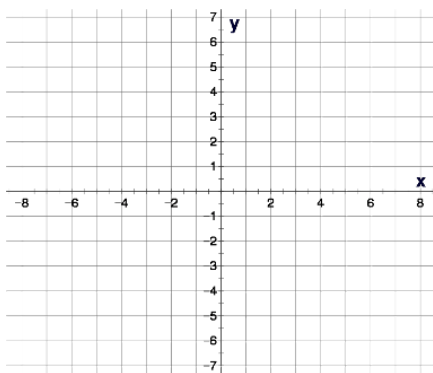
(,)

(,)

m =

(,)

(,)



4. $-6x + 8y = -24$

4. $-2x + 5y = -20$

4. $-4x + 7y = -21$

m =

(,)

(,)

m =

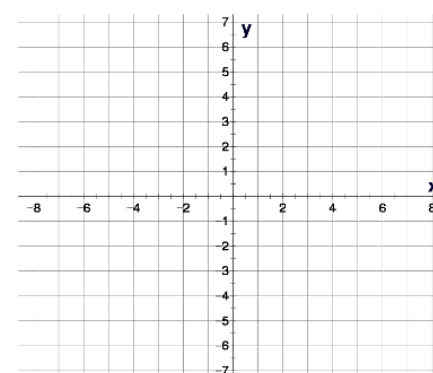
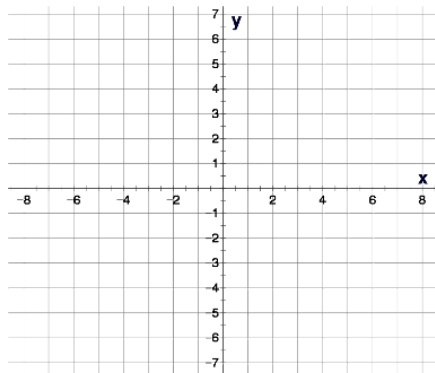
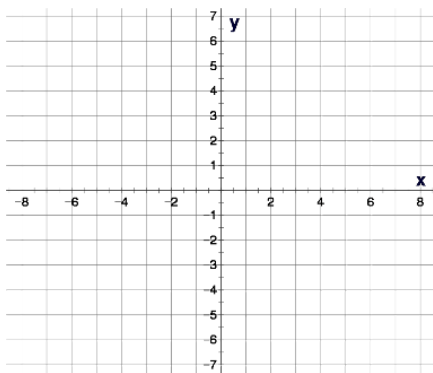
(,)

(,)

m =

(,)

(,)



Write in slope, y-intercept form and graph

5. $8x + 3y = 18$

5. $5x + 4y = 24$

5. $4x + 5y = 40$

m =

(,)

(,)

m =

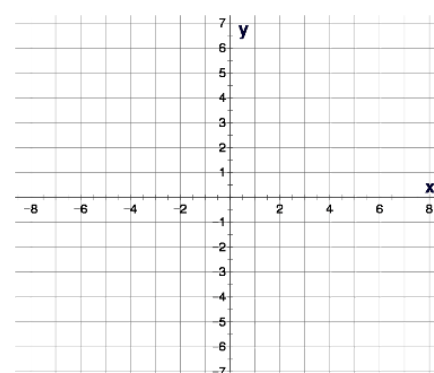
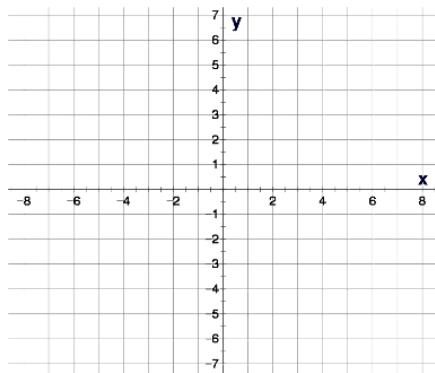
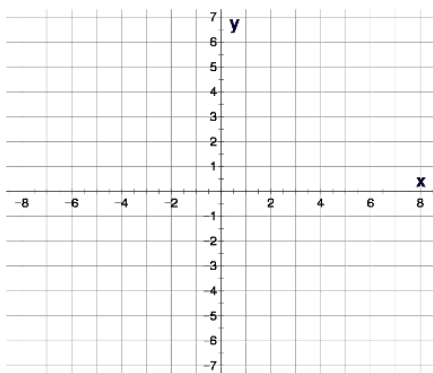
(,)

(,)

m =

(,)

(,)



6. $6x - 8y = 24$

6. $2x - 5y = 20$

6. $4x - 9y = 27$

m =

(,)

(,)

m =

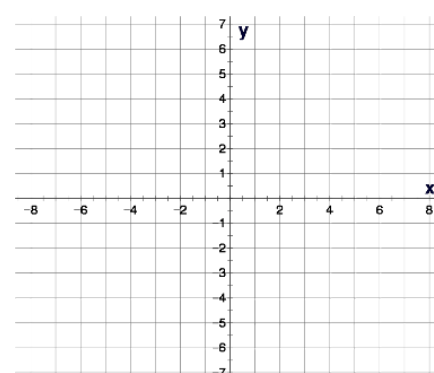
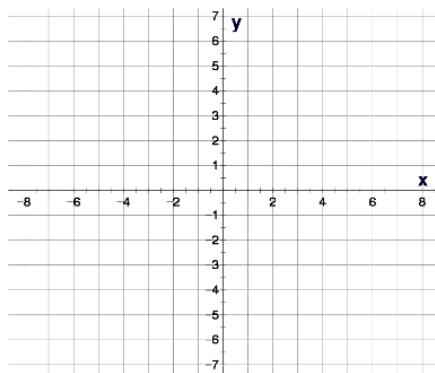
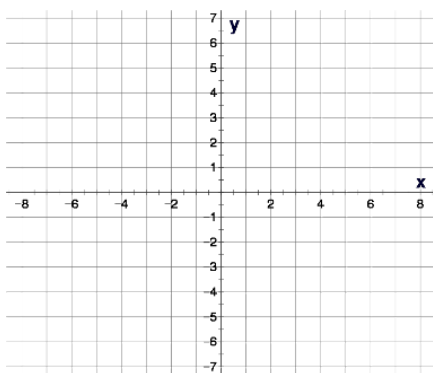
(,)

(,)

m =

(,)

(,)



Find the slope using the slope formula:

1. $(3, 5)$
 $(1, 2)$

1. $(4, 7)$
 $(1, 3)$

1. $(4, 8)$
 $(2, 5)$

2. $(-3, -5)$
 $(-1, -2)$

2. $(-4, -7)$
 $(-2, -3)$

2. $(-5, -9)$
 $(-2, -4)$

3. $(-3, 5)$
 $(1, -2)$

3. $(-4, 4)$
 $(2, -3)$

3. $(-5, 6)$
 $(2, -4)$

4. $(-3, -5)$
 $(5, -7)$

4. $(-4, -4)$
 $(10, -8)$

4. $(-1, -1)$
 $(3, -4)$

Find the slope using the slope formula:

5. $(3, -5)$
 $(-1, 2)$

5. $(-4, -7)$
 $(-2, 3)$

5. $(5, -1)$
 $(-2, -2)$

6. $(3, -5)$
 $(-1, -2)$

6. $(4, -7)$
 $(-2, -3)$

6. $(-3, -2)$
 $(-2, 4)$

7. $(-3, -5)$
 $(-1, -2)$

7. $(-4, 7)$
 $(-2, -3)$

7. $(-3, -2)$
 $(-2, 4)$

8. $(4, -8)$
 $(-8, -2)$

8. $(-5, -7)$
 $(-7, 3)$

8. $(-3, -7)$
 $(-9, -4)$

Find the slope intercept equation:

1. $(8, 2)$
 $(4, -4)$

1. $(4, 1)$
 $(2, -2)$

1. $(-3, 12)$
 $(3, 4)$

2. $(-4, -7)$
 $(-8, -8)$

2. $y = \frac{3}{2}x - 5$
 $(-5, -5)$
 $(10, -14)$

2. $y = -\frac{4}{3}x + 8$
 $(10, -3)$
 $(-5, 3)$

$y = -\frac{3}{5}x - 8$

$y = -\frac{2}{5}x + 1$

Find the slope intercept equation:

3. $(-6, -13)$
 $(6, -7)$

3. $(-2, -11)$
 $(2, -9)$

3. $(-4, 10)$
 $(4, 4)$

4. $(-3, 6)$
 $(3, -4)$

4. $(-2, -17)$
 $(4, -2)$

4. $(1, -3)$
 $(3, -13)$

$$y = \frac{1}{2}x - 10$$

$$y = \frac{5}{2}x - 12$$

Find a parallel and perpendicular equation through the given point:

1. $\parallel: y = 2x - 5$ (2, 3) 1. $\parallel: y = 3x - 2$ (2, 3) 1. $\parallel: y = 4x - 3$ (2, 3)

$$y = 3x - 13$$

2. $\parallel: y = \frac{2}{3}x - 1$ (-3, -1) 2. $\parallel: y = \frac{3}{4}x - 2$ (-4, -1) 2. $\parallel: y = \frac{2}{5}x - 3$ (-5, 1)

$$y = \frac{3}{4}x + 2$$

Find a parallel and perpendicular equation through the given point:

3. $\parallel: y = -x + 2$ $(-4, 3)$ 3. $\parallel: y = -x + 3$ $(-5, 3)$ 3. $\parallel: y = -x + 4$ $(-6, 5)$

$$y = -x - 2$$

4. $\parallel: y = -\frac{2}{3}x + 2$ $(6, -5)$ 4. $\parallel: y = -\frac{3}{2}x + 3$ $(6, -5)$ 4. $\parallel: y = -\frac{5}{6}x + 1$ $(6, -7)$

$$y = -\frac{3}{2}x + 4$$

Find a parallel and perpendicular equation through the given point:

4. $\perp: y = -\frac{2}{3}x + 2$ $(-6, -7)$ 4. $\perp: y = -\frac{3}{2}x + 1$ $(-6, -3)$ 4. $\perp: y = -\frac{3}{5}x + 3$ $(-6, -5)$

5. $\perp: y = 2x - 5$ $(2, 1)$ 5. $\perp: y = 3x - 1$ $(3, 2)$ 5. $\perp: y = 4x - 3$ $(4, 3)$

$$y = -\frac{1}{3}x + 3$$

Find a parallel and perpendicular equation through the given point:

6. $\perp: y = \frac{2}{3}x - 1$ $(-4, 10)$ 6. $\perp: y = \frac{5}{3}x - 4$ $(-10, 8)$ 6. $\perp: y = \frac{2}{5}x - 7$ $(-6, 10)$

7. $\perp: y = x + 2$ $(-5, -1)$ 7. $\perp: y = x + 4$ $(-6, -2)$ 7. $\perp: y = x - 7$ $(-7, -3)$

$$y = -\frac{3}{5}x + 2$$

8. $\perp: y = -x + 2$ $(-5, -1)$ 8. $\perp: y = -x + 4$ $(-6, -2)$ 8. $\perp: y = -x - 7$ $(-7, -3)$

$$y = -1x$$

Simplify using the operator

1. $x + x$

1. $x + x + x$

1. $x + x + x + x$

2. $x \cdot x$

2. $x \cdot x \cdot x$

2. $x \cdot x \cdot x \cdot x$

3. $3x^3 + 2x^2 + x^3 + x^2$

3. $4x^4 + 3x^3 + x^4 + x^3$

3. $4x^5 + 3x^3 + x^5 + x^3$

4. $-3x^3 + 2x^2 + x^3 + x^2$

4. $-4x^4 + 3x^3 + x^4 - x^3$

4. $-4x^5 + 3x^3 - x^5 - x^3$

5. $3x^2 + 2x + x + 5$

5. $5x^2 - 2x + x - 7$

5. $4x^2 - 3x + x - 6$

6. $x^2 - 6x - x - 9$

6. $x^2 - x + 8x + 12$

6. $x^2 - x - 4x - 5$

Simplify using the operator

7. $4x^4 + 3x^2 + x^2 + 3$

7. $6x^4 - 3x^2 + x^2 - 15$

7. $x^4 - x^2 + 8x^2 - 16$

8. $2x^4 - x^2 - x^2 + 3$

8. $3x^4 - 3x^2 + x^2 - 15$

8. $x^4 - x^2 - 8x^2 - 6$

9. $(2x)(3x)$

9. $(4x^2)(3x)$

9. $(5x^3)(7x)$

10. $(-4x)(-x)$

10. $(5x^3)(-x)$

10. $(-4x^3)(-3x)$

11. $(5x)(-3x^2)$

11. $(-3x)(-3x^3)$

11. $(-x^4)(-x)$

Multiply using distribution

1. $2(x^2 - 2x - 3)$

1. $3(2x^2 + 15x - 1)$

1. $4(x^3 - 10x^2 + 6x - 1)$

2. $x(x^2 - 2x - 3)$

2. $x(2x^2 + 15x - 1)$

2. $x(x^3 - 10x^2 + 6x - 1)$

3. $6x^2(x^2 - 2x - 3)$

3. $4x^3(2x^2 + 15x - 1)$

3. $2x^4(10x^2 - 6x + 1)$

4. $6x(-x^2 + 2x - 4)$

4. $2x^2(-2x^3 - 5x + 1)$

4. $3x^2(-x^4 + 5x^2 - 1)$

Multiply using distribution

$$5.- (x^3 - 10x^2 + 6x - 1) \quad 5. \quad - 2(x^3 - 10x^2 + 6x + 1) \quad 5.- 3(x^3 - 10x^2 + 6x + 1)$$

$$6.- 3(-x^4 + 5x^3 + 2x - 1) \quad 6.- (-x^4 + 5x^3 + 2x - 1) \quad 6.- 5(-x^4 + 5x^3 + 2x - 1)$$

$$7.- 6x(-x^4 - 5x^3 + 2x - 1) \quad 7.- 7x(-x^4 - 5x^3 + 2x - 1) \quad 7.- 8x(-x^4 - 5x^3 + 2x - 1)$$

$$8.- 5x^2(-x^4 - 5x^3 + 2x - 1) \quad 8.- 5x^3(-x^4 - 5x^3 + 2x - 1) \quad 8.- 3x^5(-x^4 - 5x^3 + 2x - 1)$$

Multiply binomials using F.O.I.L.

1. $(3x + 5)(x + 4)$

1. $(2x + 5)(x + 2)$

1. $(3x + 5)(4x + 5)$

2. $(5x + 3)(x - 2)$

$$2x^2 + 9x + 10$$

2. $(3x + 2)(x - 4)$

2. $(7x + 4)(x - 4)$

3. $(3x - 5)(x + 4)$

$$3x^2 - 10x - 8$$

3. $(3x - 5)(x + 2)$

3. $(3x - 5)(x + 5)$

4. $(5x - 3)(x - 2)$

$$3x^2 + 1x - 10$$

4. $(7x - 2)(x - 4)$

4. $(x - 11)(x - 11)$

5. $(x + 3)(x + 3)$

$$7x^2 - 30x + 8$$

5. $(x + 8)(x + 8)$

5. $(x + 7)(x + 7)$

$$x^2 + 16x + 64$$

6. $(5x - 8)(5x - 8)$

6. $(2x - 9)(2x - 9)$

6. $(3x - 4)(3x - 4)$

Multiply conjugates using F.O.I.L. $4x^2 - 36x + 81$

7. $(x + 2)(x - 2)$

7. $(x + 5)(x - 5)$

7. $(x + 4)(x - 4)$

8. $(5x + 3)(5x - 3)$

8. $x^2 - 25$
 $(2x - 7)(2x + 7)$

8. $(7x - 4)(7x + 4)$

9. $(x^2 + 9)(x^2 - 9)$

9. $4x^2 - 49$
 $(x^2 + 11)(x^2 - 11)$

9. $(x^2 - 12)(x^2 + 12)$

10. $(2x^2 + 1)(2x^2 - 1)$

10. $x^4 - 121$
 $(3x^2 - 5)(3x^2 + 5)$

10. $(4x^2 + 7)(4x^2 - 7)$

$9x^4 - 25$

11. $(x + 8)^2$

11. $(x + 3)^2$

11. $(x + 4)^2$

12. $(x - 11)^2$

$x^2 + 6x + 9$
12. $(x - 12)^2$

12. $(x - 10)^2$

13. $(5x + 8)^2$

$x^2 - 24x + 144$
13. $(2x + 3)^2$

13. $(3x + 4)^2$

14. $(2x^2 - 9)^2$

$4x^2 + 12x + 9$
14. $(3x^2 - 4)^2$

14. $(4x^2 - 5)^2$

15. $(2x^3 + 11)^2$

$9x^4 - 24x^2 + 16$
15. $(3x^3 + 8)^2$

15. $(4x^2 + 1)^2$

$9x^6 + 48x^3 + 64$

Factor out the GCF

1. $12x^2 - 10x - 4$

1. $15x^2 + 3x - 6$

1. $30x^2 + 35x - 25$

2. $24x^3 - 28x^2 - 20x$

2. $24x^3 - 12x^2 - 18x$

2. $12x^5 - 8x^4 - 24x$

3. $18x^5 + 36x^3 + 27x^2$

3. $20x^5 + 36x^3 + 28x^2$

3. $20x^5 + 15x^4 + 45x^2$

4. $14x^6 - 35x^3 + 7x^2$

4. $18x^6 - 27x^5 + 9x^2$

4. $15x^6 - 35x^4 + 5x^2$

Factor out the GCF

5. $-8x^3 - 10x$

5. $-18x^4 - 32x$

5. $-28x^5 - 20x$

6. $-24x^3 - 28x^2 - 20x + 4$

6. $-14x^4 + 35x^3 - 21x^2 + 7$

6. $-12x^5 + 8x^4 + 24x^3 - 4$

7. $-15x^5 + 10x^4 - 5x^3$

7. $-12x^5 + 15x^4 - 3x^3$

7. $-27x^6 - 9x^5 + 9x^3$

8. $-4x^4 - 8x^3 + 10x^2$

8. $-12x^5 - 18x^4 + 12x^3$

8. $-24x^6 - 16x^5 + 12x^4$

Factor into 2 binomials

1. $2x^2 + 5x + 2$

1. $2x^2 + 7x + 3$

1. $2x^2 + 5x + 3$

2. $5x^2 - 12x + 4$

2. $3x^2 - 8x + 4$

2. $3x^2 - 13x + 4$

3. $3x^2 + 5x - 2$

3. $2x^2 + x - 3$

3. $2x^2 + 5x - 3$

4. $6x^2 - 7x - 3$

4. $6x^2 - 13x - 5$

4. $6x^2 - 7x - 5$

Factor into 2 binomials

5. $5x^2 + 16x + 3$

5. $7x^2 + 15x + 2$

5. $7x^2 + 9x + 2$

6. $2x^2 - 7x + 3$

$(7x + 1)(x + 2)$

6. $5x^2 - 11x + 2$

6. $5x^2 - 7x + 2$

7. $5x^2 + 14x - 3$

$(5x - 1)(x - 2)$

7. $5x^2 + 2x - 3$

7. $5x^2 - 2x - 3$

8. $6x^2 - 13x - 5$

$(5x - 3)(x + 1)$

8. $6x^2 + 13x - 5$

8. $6x^2 + 7x - 5$

$(3x - 1)(2x + 5)$

Factor into 2 binomials

9. $x^2 + 5x + 6$

9. $x^2 + 7x + 6$

9. $x^2 + 5x + 4$

10. $x^2 - 9x + 8$

10. $x^2 - 6x + 8$

10. $x^2 - 5x + 6$

11. $x^2 + x - 12$

11. $x^2 + 4x - 12$

11. $x^2 - 11x - 12$

12. $x^2 - 14x - 15$

12. $x^2 + 2x - 15$

12. $x^2 + 14x - 15$

Factor binomials into conjugates

13. $16x^2 - 25$

13. $4x^2 - 9$

13. $25x^2 - 49$

14. $121x^2 - 225$

14. $4x^2 - 81$

14. $81x^2 - 36$

15. $81x^4 - 1$

15. $49x^4 - 64$

15. $64x^4 - 1$

16. $16x^6 - 169$

16. $9x^6 - 196$

16. $81x^6 - 225$

Solve quadratic equations by factoring

1. $3x^2 + 8x + 5 = 0$

1. $2x^2 + 7x + 5 = 0$

1. $3x^2 + 16x + 5 = 0$

2. $5x^2 - 8x + 3 = 0$

2. $3x^2 - 10x + 7 = 0$

2. $5x^2 - 16x + 3 = 0$

$$x = -\frac{5}{2} \quad x = -1$$

3. $2x^2 + 5x - 3 = 0$

3. $3x^2 + x - 2 = 0$

3. $2x^2 + 5x + 3 = 0$

$$x = \frac{7}{3} \quad x = 1$$

$$x = \frac{2}{3} \quad x = -1$$

Solve for x by factoring

4. $6x^2 - 4x - 2 = 0$

4. $6x^2 - 2x - 4 = 0$

4. $4x^2 - 14x + 10 = 0$

5. $x^2 + 5x + 6$

5. $x^2 + 7x + 6$

5. $x^2 + 5x + 4$

$$x = -\frac{2}{3}, x = 1$$

6. $x^2 - 9x + 8$

6. $x^2 - 6x + 8$

6. $x^2 - 5x + 6$

$$x = -1, x = -6$$

$$x = 4, x = 2$$

Solve for x by factoring

7. $4x^2 - 25 = 0$

7. $9x^2 - 16 = 0$

7. $16x^2 - 49 = 0$

$$x = -\frac{4}{3} \quad x = \frac{4}{3}$$

8. $121x^2 - 225 = 0$

8. $144x^2 - 169 = 0$

8. $81x^2 - 196 = 0$

$$x = -\frac{13}{12} \quad x = \frac{13}{12}$$

9. $16x^2 - 225 = 0$

9. $225x^2 - 9 = 0$

9. $25x^2 - 256 = 0$

Solve by using the Quadratic Formula

1. $3x^2 + 8x + 5 = 0$

a = b = c =

$$x = \frac{-(\) \pm \sqrt{(\)^2 - 4(\)(\)}}{2(\)}$$

1. $3x^2 + 10x + 3 = 0$

a = b = c =

$$x = \frac{-(\) \pm \sqrt{(\)^2 - 4(\)(\)}}{2(\)}$$

1. $3x^2 + 7x + 2 = 0$

a = b = c =

$$x = \frac{-(\) \pm \sqrt{(\)^2 - 4(\)(\)}}{2(\)}$$

$$x = -\frac{1}{3} \quad x = -3$$

Solve by using the Quadratic Formula

2. $2x^2 - 5x = 0$

$a = \quad b = \quad c =$

$$x = \frac{-(\quad) \pm \sqrt{(\quad)^2 - 4(\quad)(\quad)}}{2(\quad)}$$

2. $3x^2 - 5x = 0$

$a = \quad b = \quad c =$

$$x = \frac{-(\quad) \pm \sqrt{(\quad)^2 - 4(\quad)(\quad)}}{2(\quad)}$$

2. $2x^2 - 3x = 0$

$a = \quad b = \quad c =$

$$x = \frac{-(\quad) \pm \sqrt{(\quad)^2 - 4(\quad)(\quad)}}{2(\quad)}$$

$$x = \frac{5}{3}$$

$$x = 0$$

Solve by using the Quadratic Formula

3. $16x^2 - 25 = 0$

a = b = c =

$$x = \frac{-(\quad) \pm \sqrt{(\quad)^2 - 4(\quad)(\quad)}}{2(\quad)}$$

3. $25x^2 - 16 = 0$

a = b = c =

$$x = \frac{-(\quad) \pm \sqrt{(\quad)^2 - 4(\quad)(\quad)}}{2(\quad)}$$

3. $9x^2 - 49 = 0$

a = b = c =

$$x = \frac{-(\quad) \pm \sqrt{(\quad)^2 - 4(\quad)(\quad)}}{2(\quad)}$$

$$x = \frac{4}{5}$$

$$x = -\frac{4}{5}$$

Solve by using the Quadratic Formula

4. $x^2 - 6x - 7 = 0$

a = b = c =

$$x = \frac{-(\quad) \pm \sqrt{(\quad)^2 - 4(\quad)(\quad)}}{2(\quad)}$$

4. $x^2 - 2x - 3 = 0$

a = b = c =

$$x = \frac{-(\quad) \pm \sqrt{(\quad)^2 - 4(\quad)(\quad)}}{2(\quad)}$$

4. $x^2 - 4x - 12 = 0$

a = b = c =

$$x = \frac{-(\quad) \pm \sqrt{(\quad)^2 - 4(\quad)(\quad)}}{2(\quad)}$$

$x = 3$

$x = -1$

Solve by using the Quadratic Formula

5. $4x^2 - 11x - 3 = 0$

$a = \quad b = \quad c =$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

5. $2x^2 + 9x - 5 = 0$

$a = \quad b = \quad c =$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

5. $3x^2 - 10x - 8 = 0$

$a = \quad b = \quad c =$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{1}{2} \quad x = -5$$

Solve by Completing the Square

1. $x^2 - 8x + 7 = 0$

1. $x^2 - 10x + 24 = 0$

1. $x^2 - 6x + 5 = 0$

$x = 6$

$x = 4$

Solve by Completing the Square

2. $x^2 + 10x + 21 = 0$

2. $x^2 + 12x + 35 = 0$

2. $x^2 + 14x + 40 = 0$

$x = -7$

$x = -5$

Solve by Completing the Square

3. $x^2 - 3x - 4 = 0$

3. $x^2 - 5x - 6 = 0$

3. $x^2 - 7x - 30 = 0$

$x = -1 \quad x = 6$

Solve by Completing the Square

4. $x^2 - 9x + 8 = 0$

4. $x^2 - 7x + 6 = 0$

4. $x^2 - 11x + 30 = 0$

$x = 6$

$x = 1$

Solve by Completing the Square

5. $x^2 + 11x - 12 = 0$

5. $x^2 + 9x - 10 = 0$

5. $x^2 + 7x - 18 = 0$

$x = -10 \quad x = 1$

Convert inequalities to and from set notation, graph, and interval notation

1. $x \leq 5$

Graph:

Interval N:

1. $x \geq 5$

Graph:

Interval N:

1. $x < 5$

Graph:

Interval N:

2. $x > -4$

Graph:

Interval N:

2. $x \leq -17$

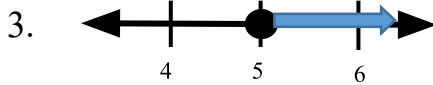
Graph:

Interval N:

2. $x > -9$

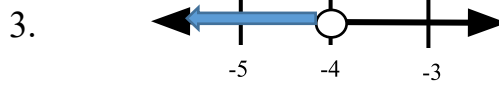
Graph:

Interval N:



Set Notation

Interval N:



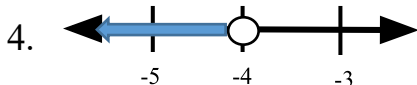
Set Notation

Interval N:



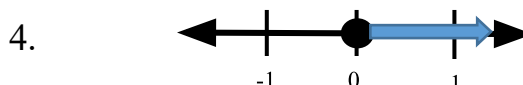
Set Notation:

Interval N:



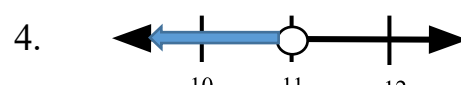
Set Notation:

Interval N:



Set Notation

Interval N:



Set Notation:

Interval N:

Convert inequalities to and from set notation, graph, and interval notation

5. $[2, \infty)$

Graph:

Set Notation:

5. $(-\infty, 4)$

Graph:

Set Notation:

5. $(-3, \infty)$

Graph:

Set Notation:

6. $(-\infty, -4)$

Graph:

Set Notation:

6. $(-\infty, 0]$

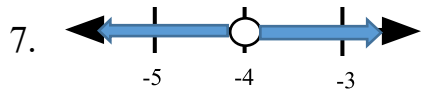
Graph:

Set Notation:

6. $(-\infty, 10]$

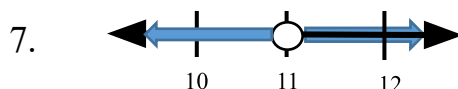
Graph:

Set Notation:



Set Notation:

Interval N:



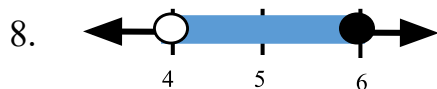
Set Notation

Interval N:

7. $(-\infty, 2) \cup (2, \infty)$

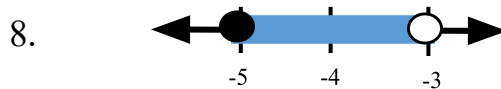
Graph:

Set Notation:



Set Notation

Interval N:



Set Notation

Interval N:

8. $(-5, 2)$

Graph:

Set Notation:

Solve for x:

1. $x + 6 < 13$

1. $x - 8 > -15$

1. $x + 11 \leq -9$

2. $13 \leq x - 4$

2. $14 \geq x - 8$

2. $-1 < x + 15$

3. $-x + 3 > -11$


3. $-x - 5 \geq -14$

3. $-x + 12 < 21$

$$x > -7$$



$$(-7, \infty)$$

-7

$$x > 22$$


$$(-\infty, 22]$$

22

$$x \leq 9$$


$$(-\infty, 9]$$

9

Solve for x:

4. $-24 \geq -13 - x$


4. $-16 > -12 - x$

4. $19 \leq 23 - x$

5. $10 - x \geq -13$

5. $22 - x > -12$

5. $-9 \leq -20 - x$

$$x > 4$$



$$(4, \infty)$$

4

6. $-14 < -x - 10$


6. $16 \leq -x + 17$

6. $-19 > -23 - x$

$$x < 34$$


$$(-\infty, 34)$$

34

$$x \leq 1$$


$$(-\infty, 1]$$

1

Solve for x:

1. $2 < x + 6 \leq 13$

1. $-15 \leq x - 8 \leq 18$

1. $-4 < x + 1 \leq 1$

2. $4 \leq 2x - 8 < 10$

$$-7 \leq x \leq 26 \quad [-7, 26] \quad -7 \quad 26$$


2. $13 \leq 3x - 8 < 19$


2. $-5 < 5x + 15 < 20$

3. $1 < \frac{x-5}{2} < 3$

$$7 \leq x < 9 \quad [7, 9) \quad 7 \quad 9$$


3. $-2 < \frac{x+3}{3} \leq 5$

3. $-8 < \frac{x-2}{4} \leq -1$

$$-9 < x \leq 12 \quad (-9, 12] \quad -9 \quad 12$$


Solve for x:

4. $|2x + 6| < 10$

4. $|3x + 6| \leq 18$

4. $|2x - 6| < 10$

5. $|3x - 9| \leq 12$

5. $|2x - 19| < 11$

5. $|4x + 6| \leq 10$



Solve for x:

6. $|x + 6| > 5$

6. $|x + 7| > 9$

6. $|x - 9| \geq 12$

7. $|4x - 6| \geq 14$

$$x < -16 \text{ or } x > 2 \quad (-\infty, -16) \cup (2, \infty)$$

7. $|2x - 7| \geq 19$

7. $|3x + 9| \geq 12$

$$x \leq -6 \text{ or } x \geq 13 \quad (-\infty, -6] \cup [13, \infty)$$

Solve for x:

8. $|3x + 27| \leq 12$

8. $|2x + 19| < 11$

8. $|4x + 6| \leq 2$

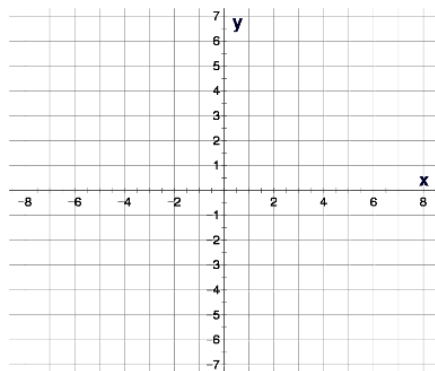
9. $|2x + 10| > 10$

9. $|3x + 18| \geq 18$

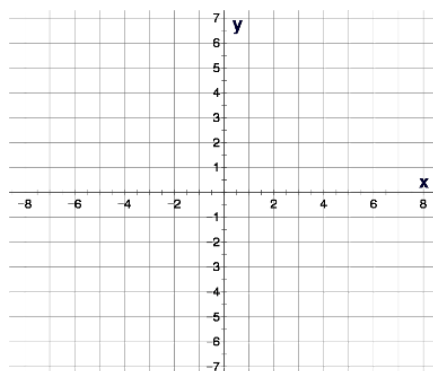
9. $|2x + 12| > 10$

Graph transformations of a function using parameters

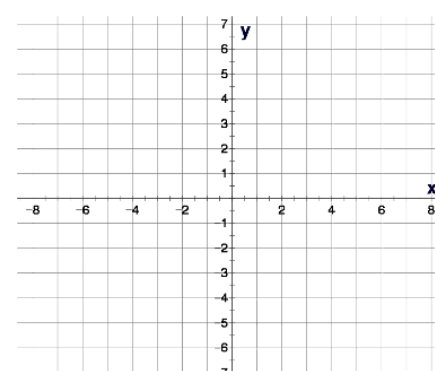
$$y = f(x)$$



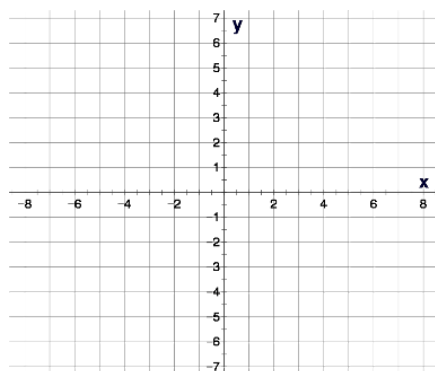
$$y = g(x)$$



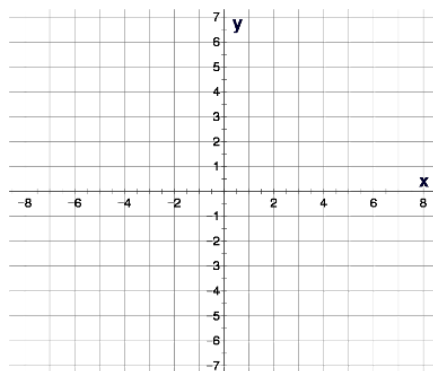
$$y = h(x)$$



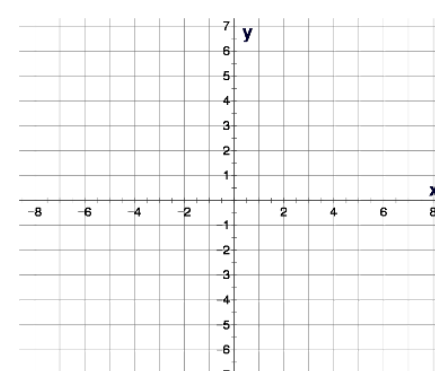
1. $y = f(x - 4)$



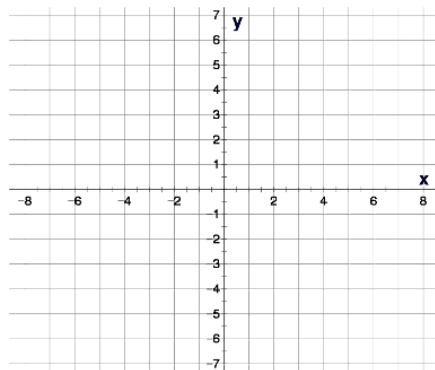
1. $y = g(x - 3)$



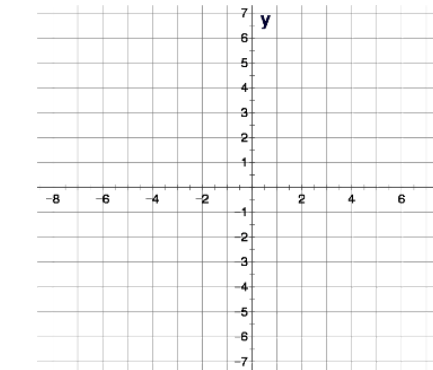
1. $y = h(x - 2)$



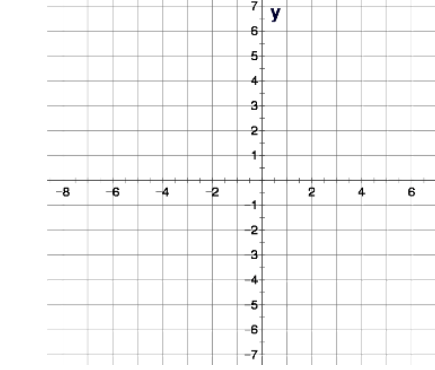
2. $y = f(x + 2)$



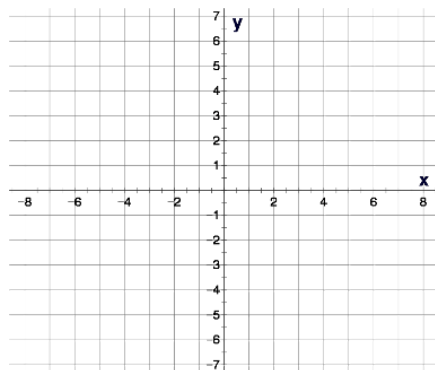
2. $y = g(x + 4)$



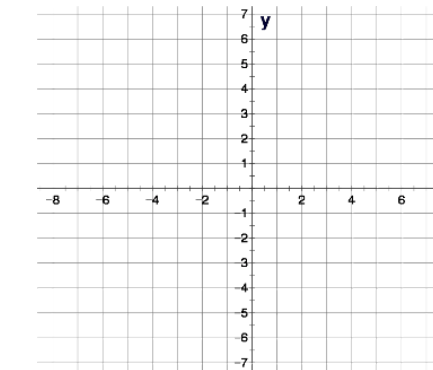
2. $y = h(x + 3)$



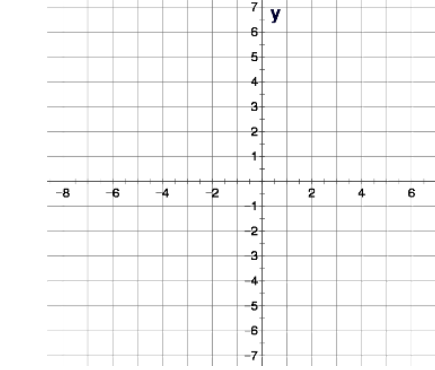
3. $y = -f(x)$



3. $y = -g(x)$

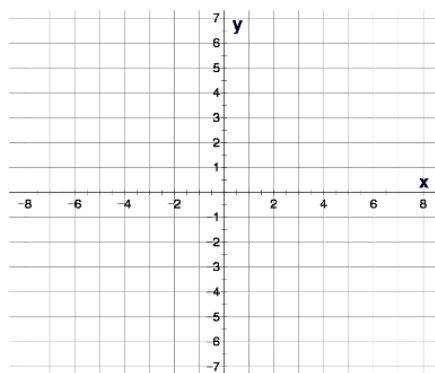


3. $y = -h(x)$

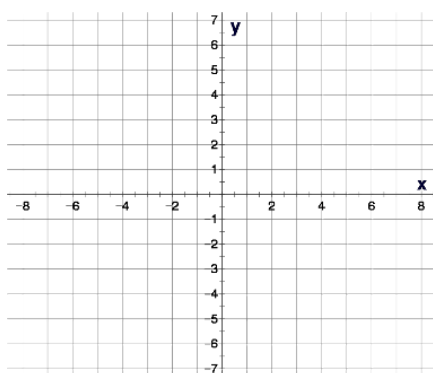


Graph transformations of a function using parameters

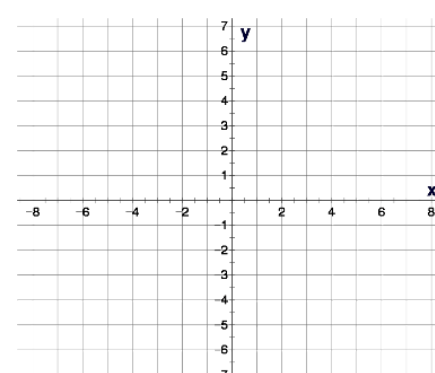
$$y = f(x)$$



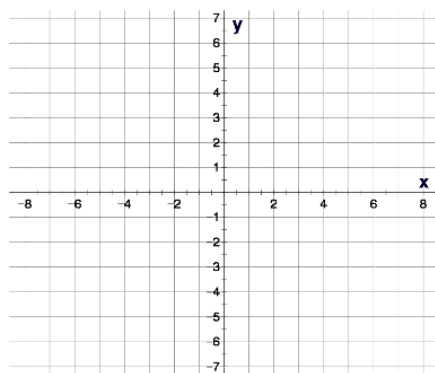
$$y = g(x)$$



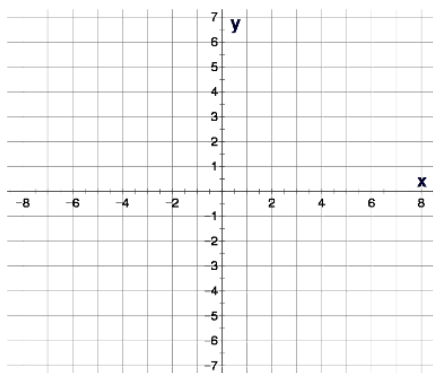
$$y = h(x)$$



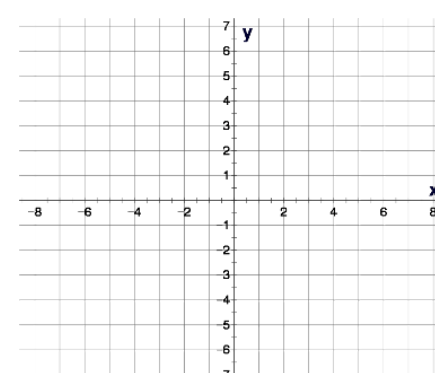
1. $y = f(x) - 4$



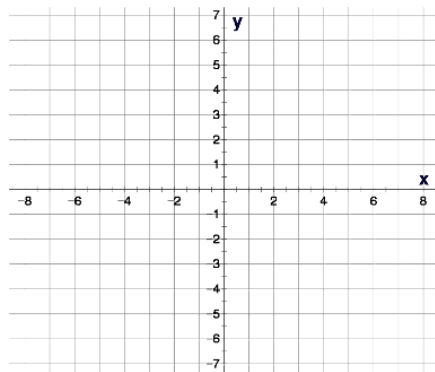
1. $y = g(x) - 3$



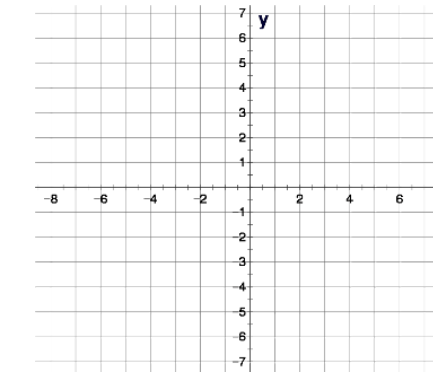
1. $y = h(x) - 2$



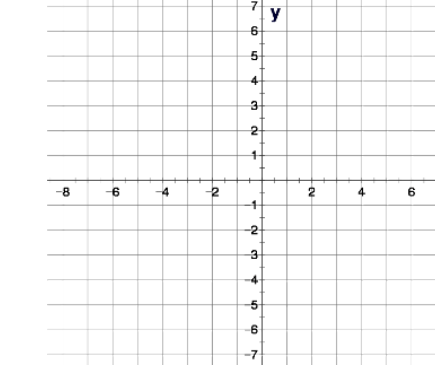
2. $y = f(x) + 2$



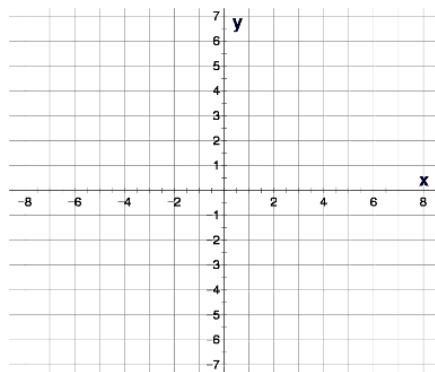
2. $y = g(x) + 1$



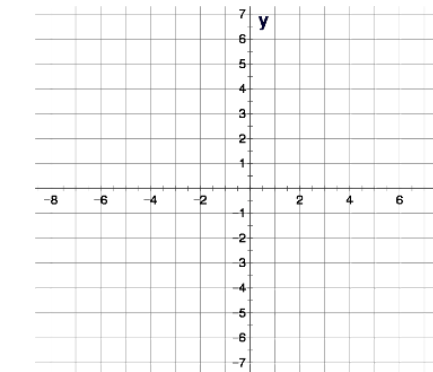
2. $y = h(x) + 2$



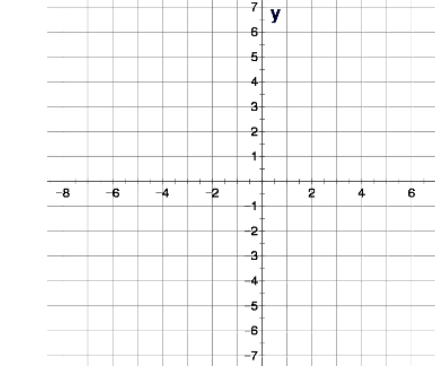
3. $y = f(-x)$



3. $y = g(-x)$

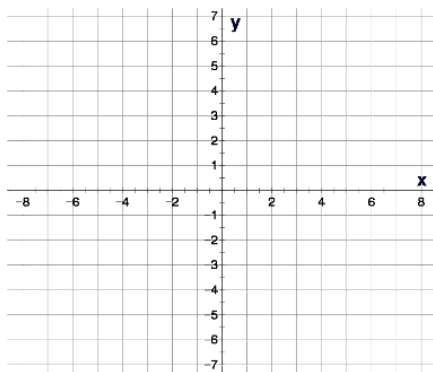


3. $y = h(-x)$

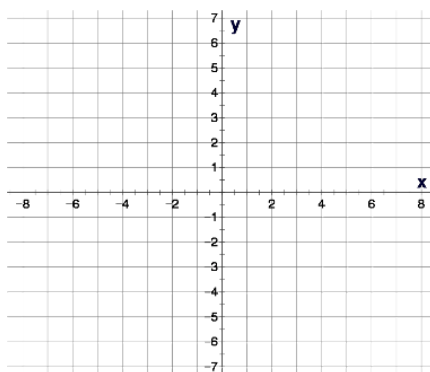


Graph by transformation, label points vertices and endpoints

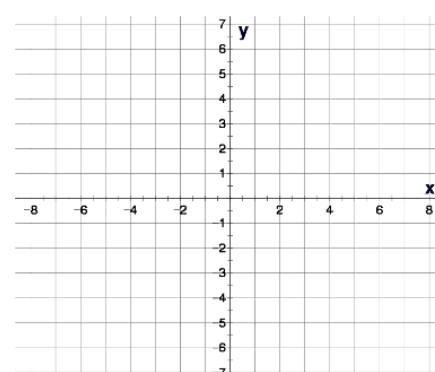
$$y = x^2$$



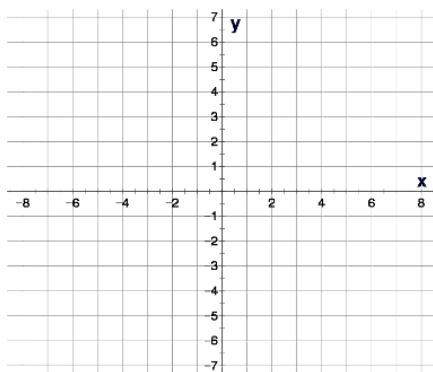
$$y = \sqrt{x}$$



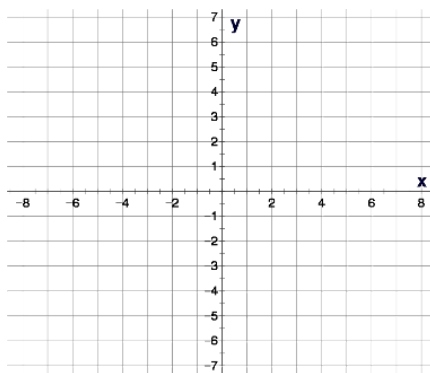
$$y = |x|$$



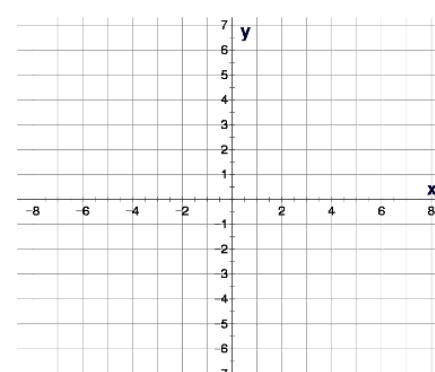
1. $y = (x - 2)^2$



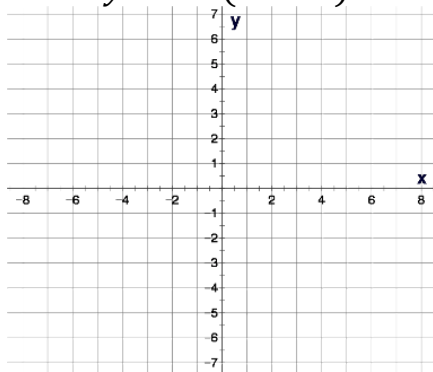
1. $y = \sqrt{x + 4}$



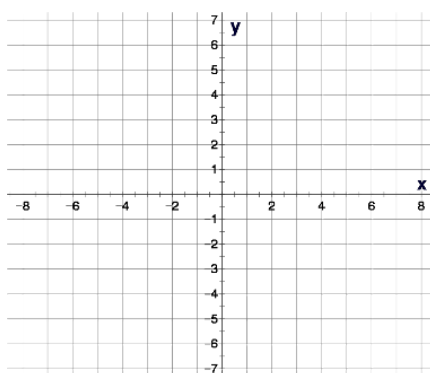
1. $y = |x + 3|$



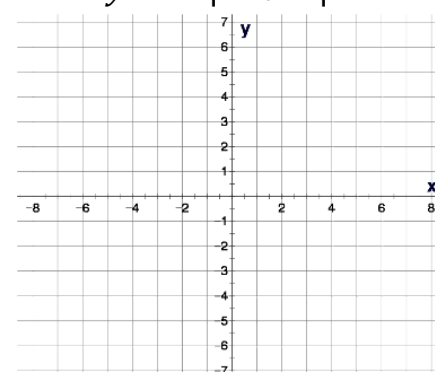
2. $y = -(x - 2)^2$



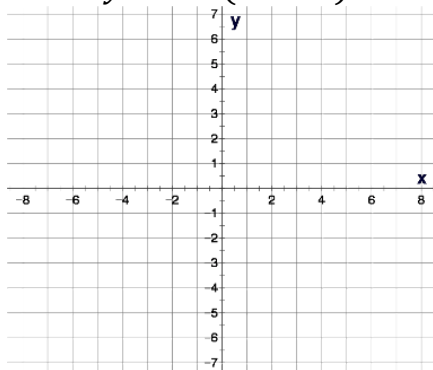
2. $y = -\sqrt{x + 4}$



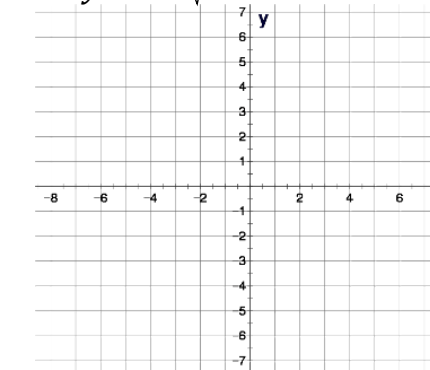
2. $y = -|x + 3|$



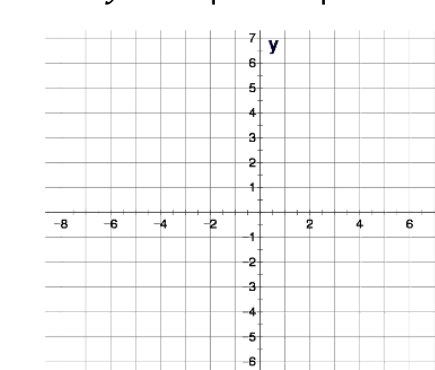
3. $y = -(x - 2)^2 + 3$



3. $y = -\sqrt{x + 4} + 5$

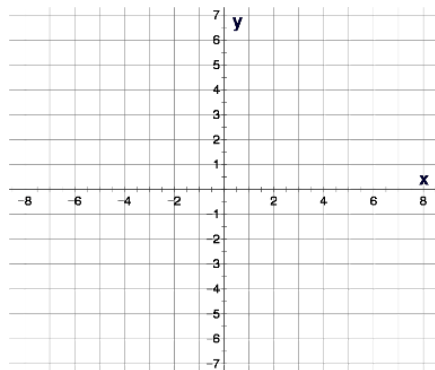


3. $y = -|x + 3| - 4$

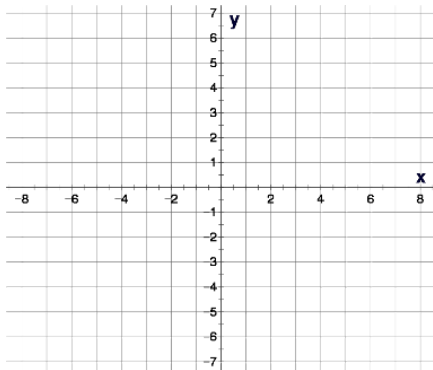


Graph by transformation, label points vertices and endpoints

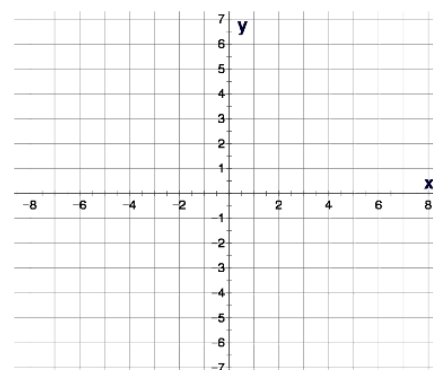
$$y = x^2$$



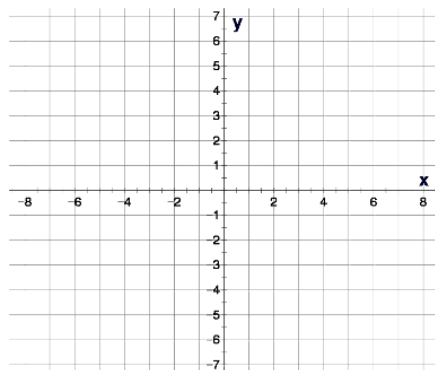
$$y = \sqrt{x}$$



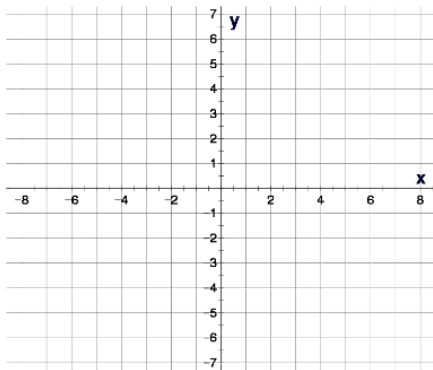
$$y = |x|$$



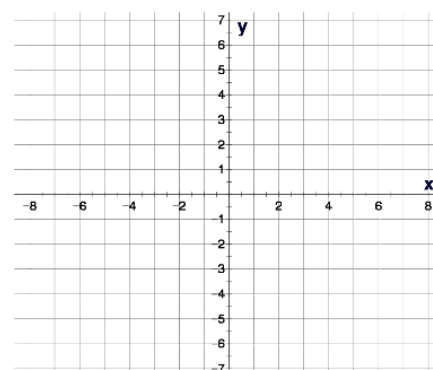
4. $y = (x + 2)^2$



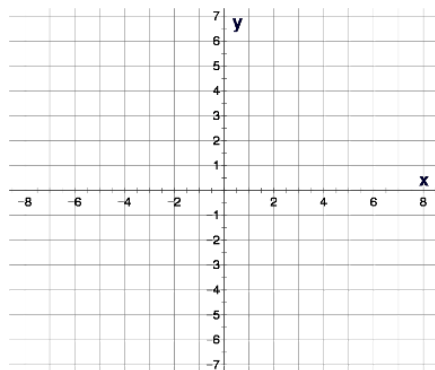
4. $y = \sqrt{x + 4}$



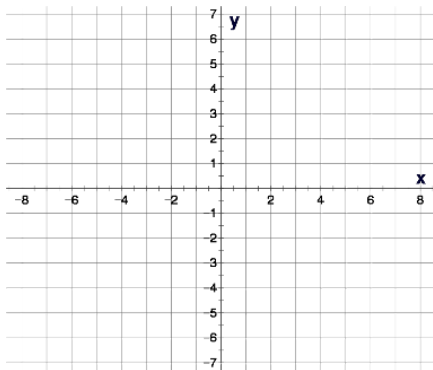
4. $y = |x - 3|$



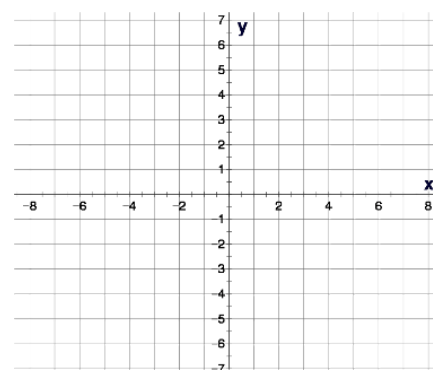
5. $y = (-x + 2)^2$



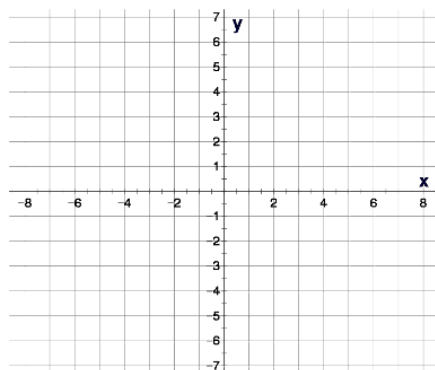
5. $y = \sqrt{-x + 4}$



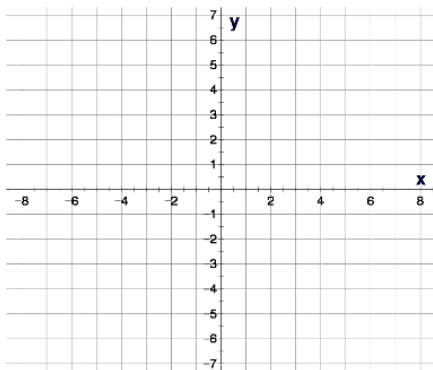
5. $y = |-x - 3|$



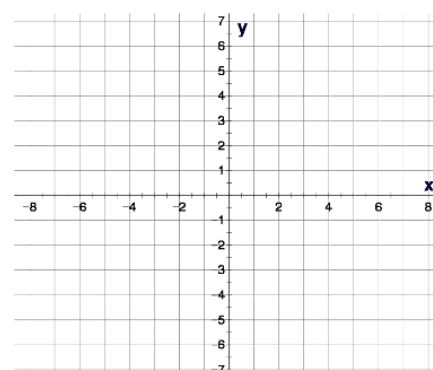
6. $y = (-x + 2)^2 - 3$



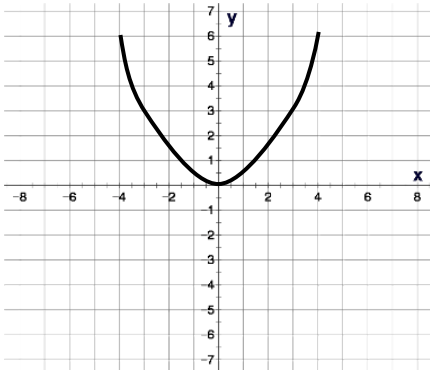
6. $y = \sqrt{-x + 4} + 5$



6. $y = |-x - 3| - 4$



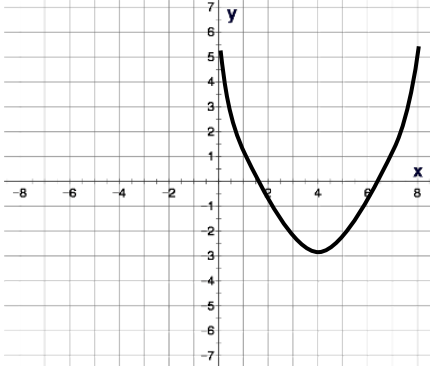
1.



Domain:

Range:

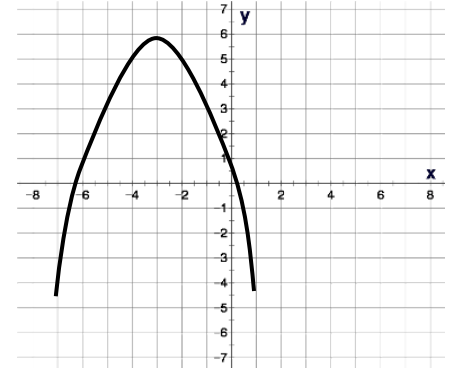
1.



Domain:

Range:

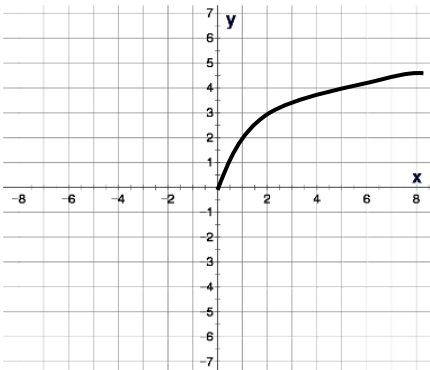
1.



Domain:

Range:

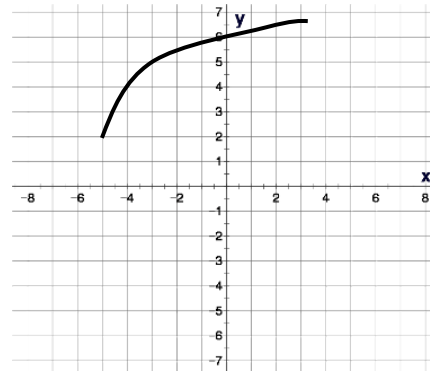
2.



Domain:

Range:

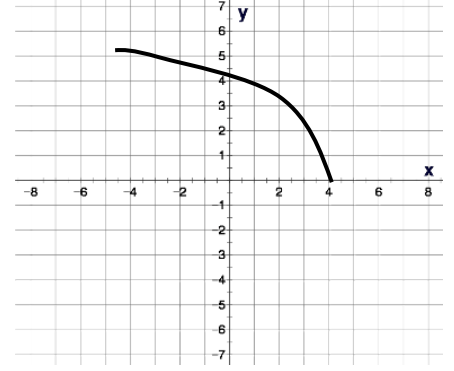
2.



Domain:

Range:

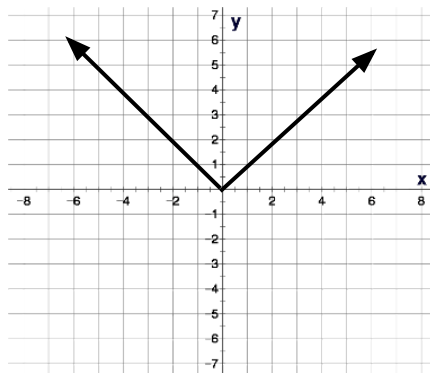
2.



Domain:

Range:

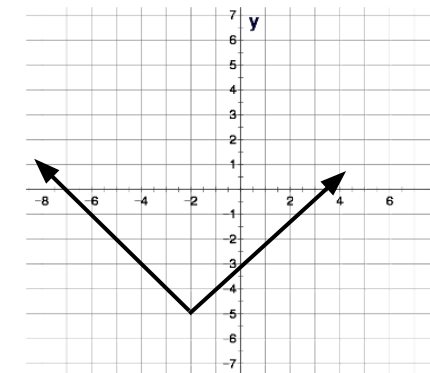
3.



Domain:

Range:

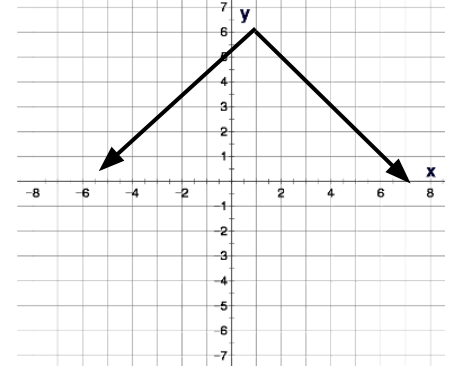
3.



Domain:

Range:

3.

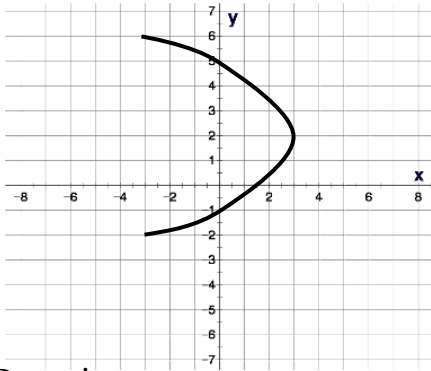


Domain:

Range:

Find the domain and range of the graph

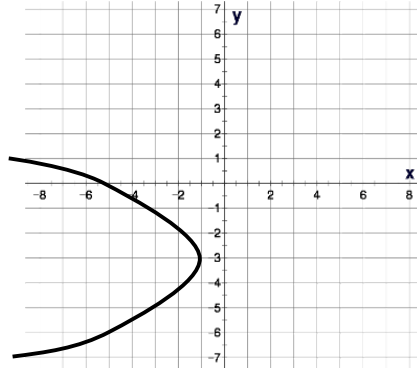
4.



Domain:

Range:

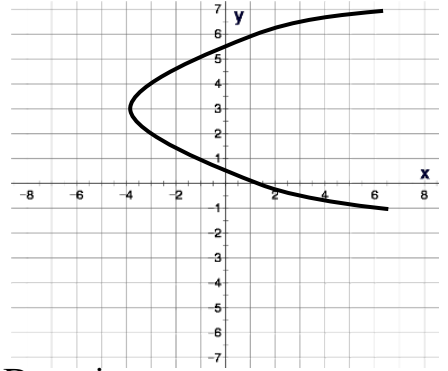
4.



Domain:

Range:

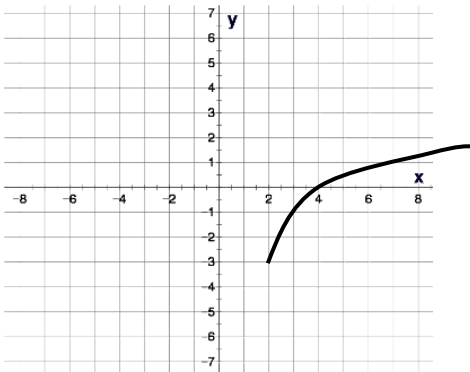
4.



Domain:

Range:

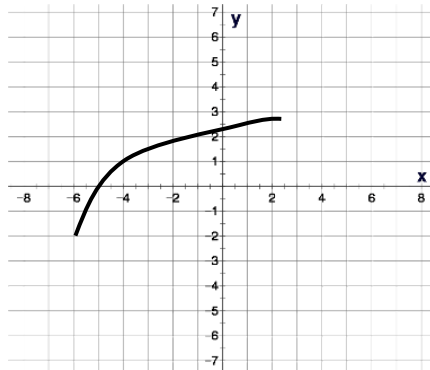
5.



Domain:

Range:

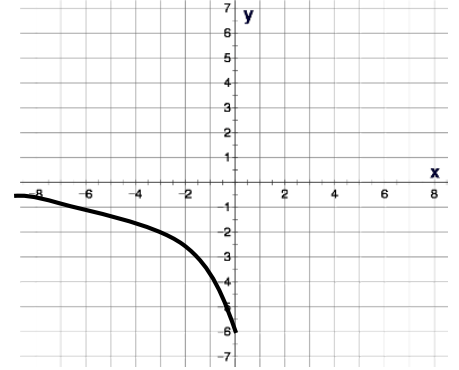
5.



Domain:

Range:

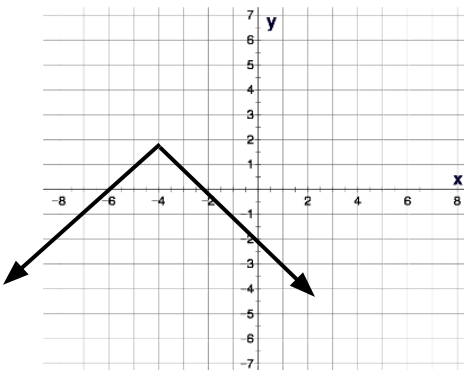
5.



Domain:

Range:

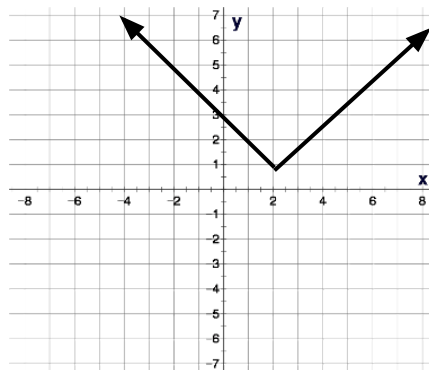
6.



Domain:

Range:

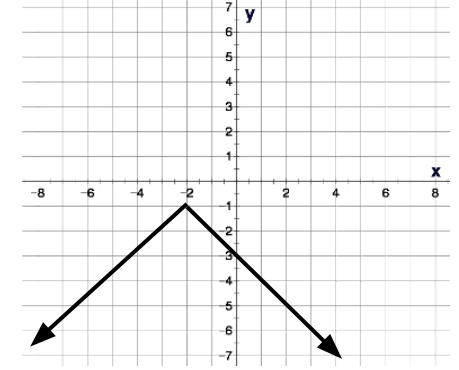
6.



Domain:

Range:

6.



Domain:

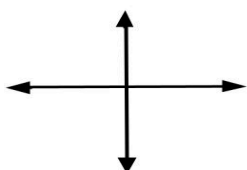
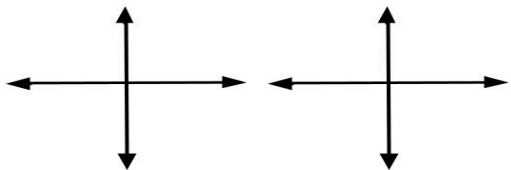
Range:

1. $y = \sqrt{x - 2} + 3$

$y =$

$y =$

$y =$



Domain:

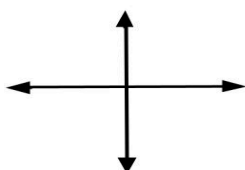
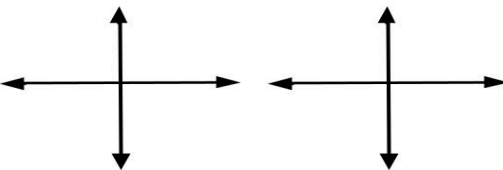
Range:

1. $y = (x - 2)^2 + 3$

$y =$

$y =$

$y =$



Domain:

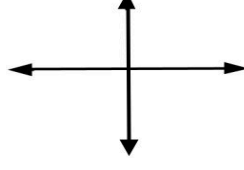
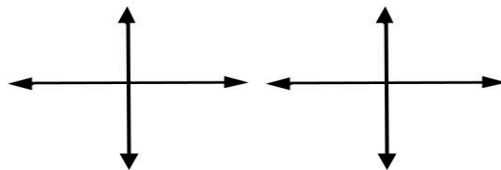
Range:

1. $y = |x - 2| + 3$

$y =$

$y =$

$y =$



Domain:

Range:

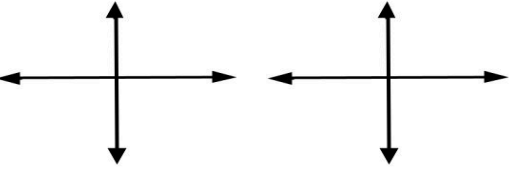
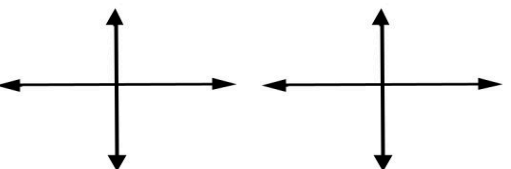
2. $y = -\sqrt{x - 2} + 3$

$y =$

$y =$

$y =$

$y =$



Domain:

Range:

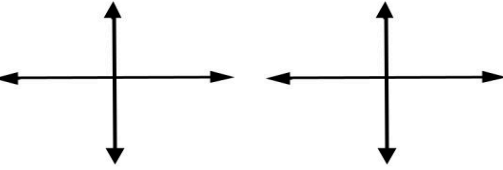
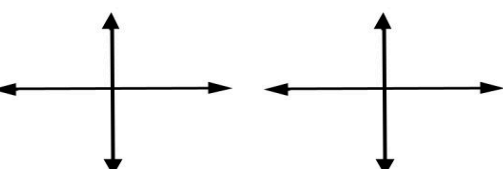
2. $y = -(x - 2)^2 + 3$

$y =$

$y =$

$y =$

$y =$



Domain:

Range:

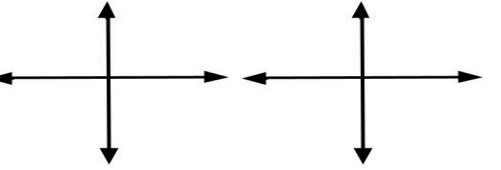
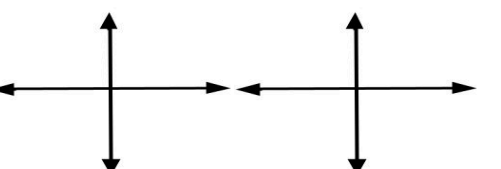
2. $y = -|x - 2| + 3$

$y =$

$y =$

$y =$

$y =$



Domain:

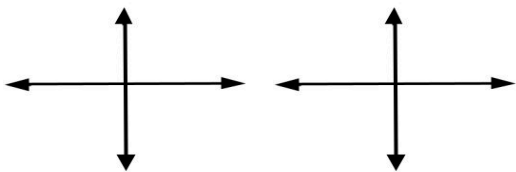
Range:

3. $y = -|x + 6|$

$y =$

$y =$

$y =$



Domain:

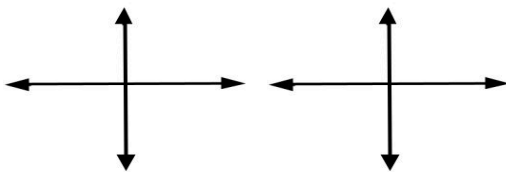
Range:

3. $y = -\sqrt{x + 5}$

$y =$

$y =$

$y =$



Domain:

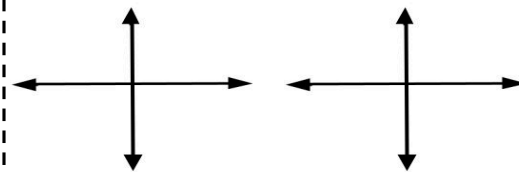
Range:

3. $y = -(x + 4)^2$

$y =$

$y =$

$y =$



Domain:

Range:

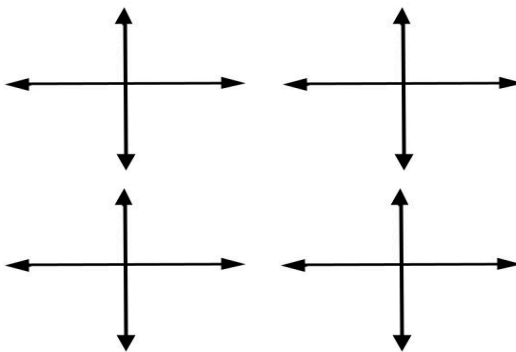
4. $y = -|x + 6| - 3$

$y =$

$y =$

$y =$

$y =$



Domain:

Range:

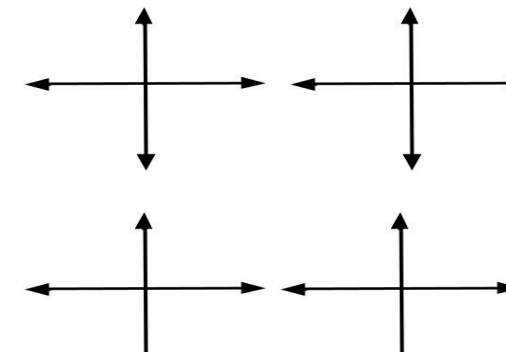
4. $y = -\sqrt{x + 5} + 2$

$y =$

$y =$

$y =$

$y =$



Domain:

Range:

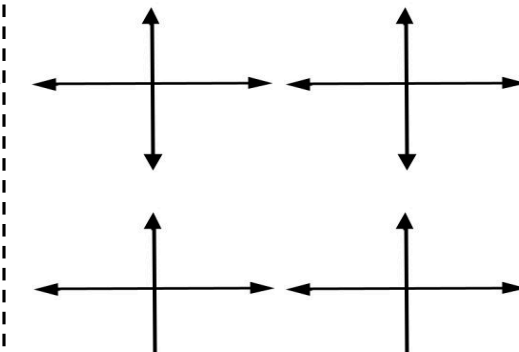
4. $y = -(x + 4)^2 - 4$

$y =$

$y =$

$y =$

$y =$



Domain:

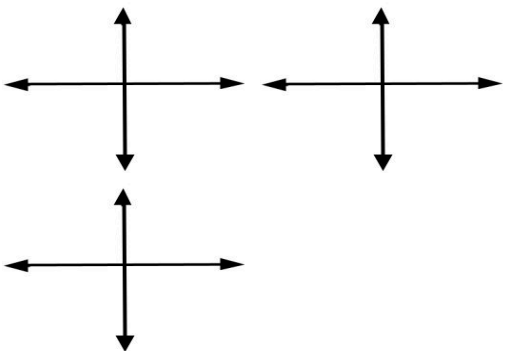
Range:

5. $y = |-x + 2|$

$y =$

$y =$

$y =$



Domain:

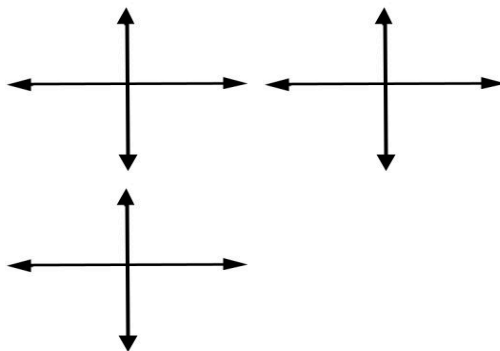
Range:

5. $y = \sqrt{-x + 3}$

$y =$

$y =$

$y =$



Domain:

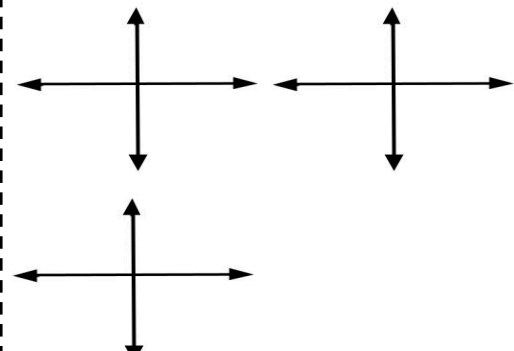
Range:

5. $y = (-x + 4)^2$

$y =$

$y =$

$y =$



Domain:

Range:

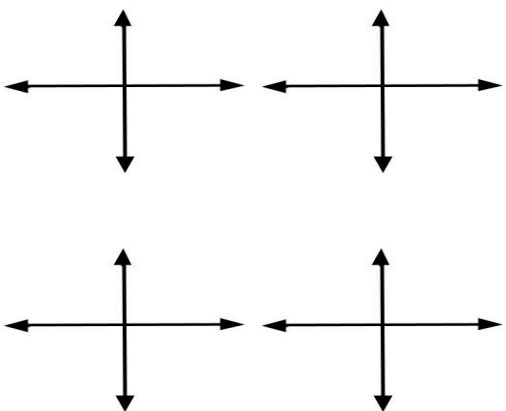
6. $y = |-x - 2| - 3$

$y =$

$y =$

$y =$

$y =$



Domain:

Range:

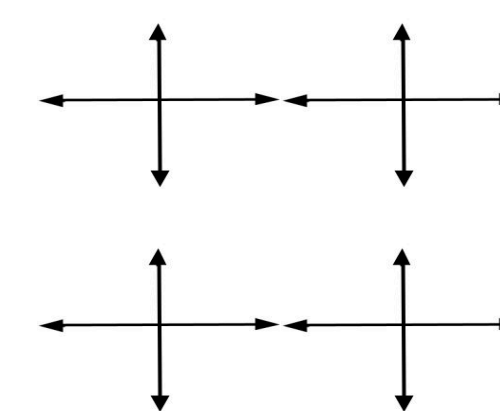
6. $y = \sqrt{-x - 3} + 2$

$y =$

$y =$

$y =$

$y =$



Domain:

Range:

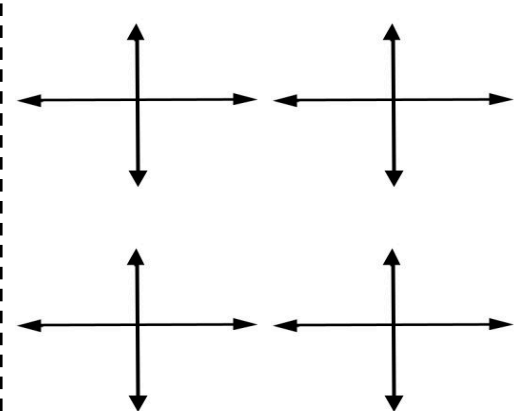
6. $y = (-x - 4)^2 - 4$

$y =$

$y =$

$y =$

$y =$



Domain:

Range:

Finding Domain of Functions Part 1

[29.1]

1. $f(x) = 3x - 10$

1. $f(x) = 3x^2 - 9x - 30$

1. $f(x) = x^3 + 3x^2 - 10x$

2. $f(x) = \frac{x+6}{-4x}$

x : All real #'s $(-\infty, \infty)$ Graph

2. $f(x) = \frac{5x-4}{10x}$

2. $f(x) = \frac{x+7}{-3x}$

3. $f(x) = \frac{x-3}{x+5}$

$x \neq 0$ $(-\infty, 0) \cup (0, \infty)$ Graph

3. $f(x) = \frac{2x+4}{x-7}$

3. $f(x) = \frac{x-1}{x-0}$

4. $f(x) = \frac{x-5}{4x+2}$

$x \neq 7$ $(-\infty, 7) \cup (7, \infty)$ Graph

4. $f(x) = \frac{x+2}{2x-10}$

4. $f(x) = \frac{x}{3x+6}$

$x \neq 5$ $(-\infty, 5) \cup (5, \infty)$ Graph

5. $f(x) = \frac{x}{4x^2 - 9}$

5. $f(x) = \frac{2x+4}{9x^2 - 16}$

5. $f(x) = \frac{x^2 - 9}{169x^2 - 196}$

6. $f(x) = \frac{-8x}{x^2 - 9x + 18}$

$x \neq -\frac{4}{3}, x \neq \frac{4}{3} \quad (-\infty, -\frac{4}{3}) \cup (-\frac{4}{3}, \frac{4}{3}) \cup (\frac{4}{3}, \infty)$ Graph

6. $f(x) = \frac{10}{x^2 - 11x + 18}$

6. $f(x) = \frac{2x-4}{x^2 - 19x + 18}$

$x \neq 2, x \neq 9 \quad (-\infty, 2) \cup (2, 9) \cup (9, \infty)$ Graph

$$7. \quad f(x) = \frac{x}{2x^2 + 7x - 15}$$

$$7. \quad f(x) = \frac{2x+4}{3x^2 - 13x - 10}$$

$$7. \quad f(x) = \frac{x^2 - 9}{6x^2 - 5x + 1}$$

$$8. \quad f(x) = \frac{x-8}{x^2 + 2x - 15}$$

$x \neq -\frac{2}{3}, x \neq 5$ $(-\infty, -\frac{2}{3}) \cup (-\frac{2}{3}, 5) \cup (5, \infty)$ Graph

$$8. \quad f(x) = \frac{2x-8}{x^2 - 3x - 10}$$

$$8. \quad f(x) = \frac{x^2 - 49}{x^2 - 7x - 18}$$

1. $f(x) = \sqrt{x + 4}$


1. $f(x) = \sqrt{x + 9}$

1. $f(x) = \sqrt{x - 1}$

2. $f(x) = \sqrt{2x - 4}$

2. $f(x) = \sqrt{3x - 9}$


2. $f(x) = \sqrt{4x + 16}$


$x \geq -9$ $[-9, \infty)$ 

3. $f(x) = \sqrt{-5x + 40}$

3. $f(x) = \sqrt{-2x + 18}$

3. $f(x) = \sqrt{-3x + 24}$

$x \geq 3$ $[3, \infty)$ 

$x \leq -9$ $(-\infty, -9]$ 

Finding Domain Part 2

[30.2]

4. $f(x) = \sqrt{-5x - 60}$

4. $f(x) = \sqrt{-2x - 24}$

4. $f(x) = \sqrt{-3x - 60}$

5. $f(x) = \sqrt{18 - 3x}$

5. $f(x) = \sqrt{12 - 6x}$

5. $f(x) = \sqrt{18 - 2x}$

6. $f(x) = \sqrt{18 - 4x}$

6. $x \leq 2$ $(-\infty, 2]$ 2
 $f(x) = \sqrt{12 - 8x}$

6. $f(x) = \sqrt{18 - 10x}$

7. $f(x) = \sqrt{4x}$

7. $f(x) = \sqrt{8x}$

7. $f(x) = \sqrt{10x}$

8. $f(x) = \sqrt{x^2 - 7x + 6}$

8. $f(x) = \sqrt{x^2 - 9x + 8}$

8. $f(x) = \sqrt{x^2 - 7x + 10}$

$x \leq 1$ or $x \geq 8$ $(-\infty, 1] \cup [8, \infty)$ Graph

9. $f(x) = \sqrt{x^2 + 5x + 6}$

9. $f(x) = \sqrt{x^2 + 6x + 8}$

9. $f(x) = \sqrt{x^2 + 11x + 10}$

$x \leq -4, x \geq -2$ $(-\infty, -4] \cup [-2, \infty)$ Graph

10. $f(x) = \sqrt{x^2 - x - 20}$

10. $f(x) = \sqrt{x^2 - x - 12}$

10. $f(x) = \sqrt{x^2 - x - 6}$

11. $f(x) = \sqrt{x^2 - 5x + 6}$

11. $f(x) = \sqrt{x^2 - 6x + 8}$

11. $f(x) = \sqrt{x^2 - 11x + 10}$

1.
$$\frac{x(x-2)(x+3)}{x^2(x+3)}$$

1.
$$\frac{x(x+5)(x-8)}{x^3(x+5)}$$

1.
$$\frac{x(x-2)(x+1)}{x^4(x+1)(x-1)}$$

2.
$$\frac{x^3(x-2)^3(x+3)^4}{x^2(x+3)^2}$$

2.
$$\frac{x^4(x+5)^2(x-8)}{x^3(x+5)^3}$$

2.
$$\frac{x^2(x-2)^2(x+1)^3}{x^4(x+1)(x-2)^3}$$

3.
$$\frac{9x^2(x+5)^4(x-5)^4}{6x^2(x-5)^3(x+5)^5}$$

3.
$$\frac{10x(x+1)^4(x-1)^2}{15x(x-1)^3(x+1)^3}$$

3.
$$\frac{20x^3(x+3)^3(x-3)^1}{12x^3(x-3)^2(x+3)^2}$$

Simplifying Rational Expressions Part 1

[31.2]

4.
$$\frac{(x^2-9)(x+4)}{(x+3)(x^2-16)}$$

4.
$$\frac{(x^2-25)(x+6)}{(x+5)(x^2-36)}$$

4.
$$\frac{(x^2-49)(x-8)}{(x-7)(x^2-64)}$$

5.
$$\frac{(4x^2-1)(x+3)}{(2x+1)(x^2-9)}$$

5.
$$\frac{(25x^2-16)(x+7)}{(5x+4)(x^2-49)}$$

5.
$$\frac{(9x^2-4)(x-9)}{(3x-2)(x^2-81)}$$

6.
$$\frac{(4x^2-1)(x+3)^2}{(2x+1)(x^2-9)}$$

6.
$$\frac{(25x^2-16)(x+7)^2}{(5x+4)(x^2-49)}$$

6.
$$\frac{(25x^2-4)(x-1)^2}{(5x-2)^2(x^2-1)}$$

1.
$$\frac{x^2+3x+2}{x^2+4x+3}$$

1.
$$\frac{x^2+4x+3}{x^2+5x+4}$$

1.
$$\frac{x^2+5x+4}{x^2+7x+6}$$

2.
$$\frac{x^2+3x-4}{x^2+2x-3}$$

2.
$$\frac{x^2-3x-10}{x^2-5x-14}$$

2.
$$\frac{x^2+2x-15}{x^2-2x-3}$$

3.
$$\frac{x^2-3x+2}{x^2-1x-2}$$

3.
$$\frac{x^2-1x-6}{x^2-5x+6}$$

3.
$$\frac{x^2-5x+4}{x^2+3x-4}$$

4.
$$\frac{2x^2+3x+1}{2x^2+5x+3}$$

4.
$$\frac{3x^2+7x+2}{3x^2+4x-4}$$

4.
$$\frac{3x^2-1x-2}{5x^2-2x-3}$$

5.
$$\frac{x^2-5x-14}{x^2-3x-10}$$

5.
$$\frac{x^2-2x-3}{x^2+2x-15}$$

5.
$$\frac{x^2+3x-4}{x^2+2x-3}$$

6.
$$\frac{x^2-3x+2}{x^2-1}$$

6.
$$\frac{x^2-5x+4}{x^2-16}$$

6.
$$\frac{x^2-4}{x^2-9}$$

Adding Rational Expressions

1.
$$\frac{4}{x^4(x+3)^2} + \frac{1}{x^2(x+3)^4}$$

2.
$$\frac{3}{x(x-5)^3} + \frac{2}{x^3(x-5)^1}$$

3.
$$\frac{2}{x(x+2)^3} + \frac{1}{x^4(x+2)^5}$$

1.
$$\frac{4}{x^2(x+1)^5} + \frac{1}{x^4(x+1)^3}$$

2.
$$\frac{2}{x(x-6)^6} + \frac{3}{x^3(x-6)^4}$$

3.
$$\frac{3}{x(x+3)^2} + \frac{1}{x^3(x+3)^4}$$

[33.1]

1.
$$\frac{4}{x^3(x+4)^1} + \frac{1}{x^2(x+4)^3}$$

2.
$$\frac{2}{x^4(x-4)^2} + \frac{2}{x^1(x-4)^4}$$

3.
$$\frac{2}{x^3(x+4)^4} + \frac{2}{x^2(x+4)^6}$$

Adding Rational Expressions

[33.2]

$$4. \quad \frac{4}{x^4(x+3)^2} + \frac{1}{x^2(x+3)^3}$$

$$4. \quad \frac{4}{x^1(x+1)^4} + \frac{1}{x^3(x+1)^3}$$

$$4. \quad \frac{4}{x^3(x+4)^1} + \frac{1}{x^2(x+4)^2}$$

$$5. \quad \frac{3}{x(x-5)^5} + \frac{2}{x^3(x-5)^6}$$

$$5. \quad \frac{2}{x^4(x-6)^5} + \frac{3}{x(x-6)^4}$$

$$5. \quad \frac{2}{x^3(x-4)^1} + \frac{2}{x^2(x-4)^2}$$

$$6. \quad \frac{2}{x(x+2)^4} + \frac{1}{x^4(x+2)^3}$$

$$6. \quad \frac{3}{x(x+3)^5} + \frac{1}{x^5(x+3)^4}$$

$$6. \quad \frac{2}{x^3(x+4)^2} + \frac{2}{x(x+4)^1}$$

Adding Rational Expressions

[33.3]

$$7. \quad \frac{5}{3x^4(x+3)^7} + \frac{3}{2x^2(x+3)^6}$$

$$7. \quad \frac{3}{4x^2(x+1)^6} + \frac{1}{3x^4(x+1)^5}$$

$$7. \quad \frac{7}{5x^3(x+4)^2} + \frac{3}{4x^2(x+4)^1}$$

$$8. \quad \frac{4}{5x^2(x-7)^3} + \frac{1}{6x^3(x-7)^2}$$

$$8. \quad \frac{3}{4x^5(x-5)^4} + \frac{1}{3x^3(x-5)^3}$$

$$8. \quad \frac{1}{2x^1(x-4)^2} + \frac{2}{3x^3(x-4)^1}$$

$$9. \quad \frac{4}{3x^5(x-2)^2} + \frac{2}{6x^3(x-2)^1}$$

$$9. \quad \frac{5}{2x^6(x-1)^4} + \frac{3}{4x^3(x-1)^3}$$

$$9. \quad \frac{3}{2x^1(x-5)^5} + \frac{5}{6x^3(x-5)^4}$$

Adding Rational Expressions

[33.4]

$$10. \frac{5}{6x^4(x-1)^6} + \frac{3}{4x^3(x-1)^5}$$

$$10. \frac{4}{8x^4(x-5)^4} + \frac{2}{6x^5(x-5)^3}$$

$$10. \frac{7}{9x^3(x-7)^2} + \frac{2}{6x^2(x-7)^1}$$

$$11. \frac{3}{6x^4(x-4)^1} + \frac{4}{3x^6(x-4)^2}$$

$$11. \frac{4}{4x^5(x-6)^3} + \frac{3}{2x^3(x-6)^4}$$

$$11. \frac{3}{4x^1(x-8)^5} + \frac{2}{8x^3(x-8)^6}$$

$$12. \frac{4}{12x^3(x+1)^1} + \frac{2}{8x^3(x+1)^2}$$

$$12. \frac{5}{12x^4(x+1)^3} + \frac{3}{9x^4(x+1)^4}$$

$$12. \frac{3}{15x^1(x+7)^4} + \frac{2}{6x^1(x+7)^5}$$

Solving rational equations

[34.1]

Solve for x

1. $\frac{2}{3x} + \frac{1}{2x} = \frac{1}{4}$

1. $\frac{1}{2x} + \frac{3}{5x} = \frac{1}{4}$

1. $\frac{3}{4x} + \frac{2}{5x} = \frac{1}{2}$

2. $\frac{2}{3} + \frac{1}{2} = \frac{1}{4x}$

2. $\frac{1}{2} + \frac{3}{5} = \frac{1}{4x}$

2. $\frac{3}{4} + \frac{2}{5} = \frac{1}{2x}$

Solve for x

3.
$$\frac{2}{9} + \frac{1}{6x} = \frac{2}{3} - \frac{5}{2x}$$

3.
$$\frac{1}{2} + \frac{2}{3x} = \frac{1}{12} - \frac{5}{4x}$$

3.
$$\frac{4}{9x} - \frac{5}{6x} = \frac{2}{3x} + \frac{1}{6}$$

4.
$$\frac{4}{3x} - \frac{1}{6x} = \frac{5}{2} - \frac{1}{3}$$

4.
$$\frac{5}{2x} - \frac{2}{4x} = \frac{11}{8} - \frac{1}{2}$$

4.
$$\frac{4}{9} - \frac{5}{6} = \frac{2}{3x} - \frac{1}{6x}$$

Solving rational equations

[34.3]

Solve for x

5. $\frac{3}{8} + \frac{1}{4x} = \frac{3}{2} - \frac{5}{x}$

5. $\frac{7}{10} + \frac{2}{5x} = \frac{1}{2} - \frac{5}{x}$

5. $\frac{5}{9} + \frac{1}{6x} = \frac{2}{3} - \frac{5}{x}$

6. $\frac{5}{3x} - \frac{1}{6x} = \frac{3}{2} - \frac{1}{3}$

6. $\frac{3}{2x} - \frac{1}{4x} = \frac{5}{8} - \frac{1}{2}$

6. $\frac{4}{9x} - \frac{5}{6x} = \frac{2}{3} - \frac{1}{6}$

Solve for the given term

1. $A = 4\pi r^2, r$

1. $A = 36\pi r^2, r$

1. $A = 9\pi r^2, r$

2. $A = \frac{a+b+c}{3}, c$

2. $A = \frac{a+b}{2}, b$

2. $A = \frac{a+b+c+d}{4}, a$

3. $A = k(b - c + d), b$

3. $A = k(b - c), b$

3. $A = k(b - c + d - e), b$

Solve for the given term

4. $A = 5(2b + 3c), b$

4. $B = 7(3b + 4c), b$

4. $C = 9(4b + 5c), b$

5. $A = \frac{h(b_1 - b_2 + b_3)}{3}, b_1$

5. $A = \frac{h(b_1 + b_2 - b_3)}{3}, b_1$

5. $A = \frac{h(b_1 + b_2)}{2}, b_1$

Solve for the given term

$$6. \quad a^2 - b^2 + c^2 = d^2, a \quad 6. \quad a^2 - b^2 - c^2 = d^2, a \quad 6. \quad a^2 + b^2 = c^2, a$$

$$7. \quad a^3 - b^3 - c^3 = d, a \quad 7. \quad a^3 - b^3 + c^3 = d, a \quad 7. \quad a^3 + b^3 + c^3 = d, a$$

$$8. \quad \sqrt[3]{a^2 + b^2 + c^2} = d, c \quad 8. \quad \sqrt[4]{a^2 - b^2 + c^2} = d, c \quad 8. \quad \sqrt{c^2 - b^2} = a, c$$

1. $2x + 3y = 13$ $(3, 2)$ and $(2, 3)$

1. $3x + 5y = 14$ $(1, 3)$ and $(3, 1)$

1. $x + 2y = 7$ $(1, 3)$ and $(-1, -3)$

2. $2x + 4y = -2$ $(3, -2)$ and $(-3, 2)$

2. $2x + y = -8$ $(5, -2)$ and $(-5, 2)$

2. $3x + 2y = -14$ $(-4, -1)$ and $(-1, -4)$

3. $y = 2x + 4$ $(-2, 1)$ and $(-1, 2)$

3. $y = 4x - 9$ $(-2, 1)$ and $(2, -1)$

3. $y = 3x + 5$ $(-1, -3)$ and $(-2, -1)$

4. $y = -3x - 8$ $(1, -11)$ and $(1, -5)$

4. $y = -5x + 8$ $(-1, 13)$ and $(1, 3)$

4. $y = -x - 5$ $(-4, -2)$ and $(-2, -3)$

5. $2x + 3y = 13, y = 2x - 1$ (2, 3) 5. $3x + 5y = 14, y = 3x - 8$ (3, 1) 5. $x + 2y = 7, y = x + 2$ (1, 3)

6. $2x + 4y = -2, x = y + 5$ (3, -2) 6. $2x + y = -8, x = y - 7$ (-5, 2) 6. $3x + 2y = -14, x = 2y - 2$ (-4, -1)

7. $y = 2x + 4, 2x - 3y = -8$ (-1, 2) 7. $y = 4x - 9, 3x - 2y = 8$ (2, -1) 7. $x - 2, y = 5, y = 3x + 5$ (-1, -3)

8. $y = -3x - 8, y = 2x + 7$ (1, -1) 8. $y = -5x + 8, y = 4x - 10$ (-1, 13) 8. $y = -x - 5, y = 3x + 11$ (-4, -1)

Solving systems by substitution

[37.1]

1. $2x + 3y = 13, y = 2x - 1$

1. $3x + 5y = 14, y = 3x - 8$

1. $x + 2y = 7, y = x + 2$

2. $2x + 4y = -2, x = y + 5$

2. $2x + y = -8, x = y - 7$

2. $3x + 2y = -14, x = 2y - 2$

Solving systems by substitution

[37.2]

3. $2x - 3y = -8, y = 2x + 4$

3. $3x - 2y = 8, y = 4x - 9$

3. $x - 2y = 5, y = 3x + 5$

4. $y = -3x - 8, y = 2x + 7$

4. $y = -5x + 8, y = 4x - 10$

4. $y = -x - 5, y = 3x + 11$

Solving systems by elimination

[38.1]

1. $2x + 3y = 13, -2x + y = -1$

1. $3x + 5y = 14, -3x + y = -8$

1. $x + 2y = 7, -x + y = 2$

2. $2x + 4y = -2, 4x - 4y = 20$

2. $2x + y = -8, x - y = -7$

2. $3x + 2y = -14, x - 2y = -2$

Solving systems by elimination

[38.2]

3. $2x + 3y = 13, -4x + 2y = -2$

3. $3x + 5y = 14, -6x + 2y = -16$

3. $3x + 6y = 21, -x + y = 2$

4. $3x + 6y = -3, 4x - 4y = 20$

4. $4x + 2y = -16, 3x - 3y = -21$

4. $9x + 6y = 63, 5x - 10y = -5$

Solving systems by elimination

[38.3]

5. $3x + 2y = 1, x - 5y = 6$

5. $3x + 2y = 10, x - 5y = 9$

5. $3x + 2y = 8, x - 5y = 14$

6. $3x - 2y = 14, 2x - 5y = 13$

6. $3x - 2y = 19, 2x - 5y = 20$

6. $3x - 2y = 6, 2x - 5y = -7$

Convert to Standard Notation

1. 1.5×10^2

1. 5.25×10^3

1. 8.125×10^4

2. 1.5×10^{-2}

2. 5.25×10^{-3}

2. 8.125×10^{-4}

3. 9.005×10^1

3. 7.0075×10^1

3. 5.9×10^1

4. 9.005×10^{-1}

4. 7.0075×10^{-1}

4. 5.9×10^{-1}

Convert to Scientific Notation

5. 13500

5. 456000

5. 8702000

6. 0.013500

6. 0.00456

6. 0.8702

Scientific Notation

[39.2]

7. 103500

7. 4005600

7. 80070250

8. 0.00105

8. 0.005006

8. 0.00001

Scientific Notation

Convert to Scientific Notation

9. 900.5×10^1

9. 70.075×10^1

9. 590×10^1

10. 900.5×10^{-1}

10. 70.075×10^{-1}

10. 590×10^{-1}

11. 0.015×10^2

11. 0.0525×10^3

11. 0.8125×10^4

12. 0.015×10^{-2}

12. 0.0525×10^{-3}

12. 0.8125×10^{-4}

13. $(1.5 \times 10^2)(1.5 \times 10^3)$

13. $(1.4 \times 10^3)(1.4 \times 10^4)$

13. $(1.4 \times 10^1)(1.5 \times 10^4)$

14. $(0.8 \times 10^3)(0.8 \times 10^{-4})$

14. $(0.9 \times 10^2)(0.9 \times 10^{-5})$

14. $(0.8 \times 10^1)(0.9 \times 10^{-4})$

15. $(0.12 \times 10^{-2})(0.12 \times 10^{-3})$

15. $(0.16 \times 10^{-1})(0.16 \times 10^{-2})$

15. $(0.12 \times 10^{-1})(0.16 \times 10^{-3})$

16. $(0.05 \times 10^6)(0.05 \times 10^{-3})$

16. $(0.09 \times 10^5)(0.09 \times 10^{-2})$

16. $(0.05 \times 10^6)(0.09 \times 10^{-2})$

Solve:

1. The distance varies directly with the speed. The distance traveled is 150 miles while the speed is 60 mph. What will the distance be if the speed is changed to 50 mph?

2. The area of a circle varies directly with its radius squared. The area is 28.26 cm^2 while the radius is 3 cm. What would the area be if the radius was 2 cm?

1. The distance varies directly with the speed. The distance traveled is 300 miles while the speed is 50 mph. What will the distance be if the speed is changed to 60 mph?

2. The area of a circle varies directly with its radius squared. The area is 12.56 cm^2 while the radius is 2 cm. What would the area be if the radius was 3 cm?

3. The price varies inversely with the demand.
The price is \$250 while the demand is 100 orders.
How many units will be in demand if the price is \$200?

3. The price varies inversely with the demand.
The price is \$240 while the demand is 10 orders.
How many units will be in demand if the price is \$200?

4. To preserve the volume of cone, the height must vary inversely with the radius squared. The height is 90 ft while the radius is 2 ft. What would the height be if the radius is 3 ft to preserve the volume?

4. To preserve the volume of cone, the height must vary inversely with the radius squared. The height is 10 inches while the radius is 3 inches. What would the height be if the radius is 6 inches to preserve the volume?

Direct and Inverse Variation

[40.3]

5. The volume of a sphere varies directly with the radius cubed. The volume of the sphere is 13.5 m^3 while the radius is 1.5 m . What would the volume be if the radius was 1 m ?

5. The volume of a sphere varies directly with the radius cubed. The volume of the sphere is 32 m^3 while the radius is 2 m . What would the volume be if the radius was 3 m ?

6. To preserve the volume of a square prism, the height must vary inversely with the side length squared. The height is 10 yards while the side length is 2 yards . What would the height be if the side length was 4 yards ?

6. To preserve the volume of a square prism, the height must vary inversely with the side length squared. The height is 90 yards while the side length is 1.5 yards . What would the height be if the side length was 3 yards ?

Name: _____ **Alg I** Date: _____ Topic: _____ SSG: _____ Score: _____



Name: _____ **Alg II** Date: _____ Topic: _____ SSG: _____ Score: _____

