1) Find the distance between the points (-4,6) and (4,-6)

2) Find the equation of the line that passes through (3,-1) and (4,1)

3) Find the equation of the line that has x-intercept -1/2 and y-intercept 4

4) Find the intercepts and graph: \(2x - 3y = 15\)

5) Find the equation of the line that passes through (-4,2) and is perpendicular to the line whose equation is \(2x - 3y = 6\)

6) Complete the square and write the equation of the circle in standard form. Give the center and radius

\[x^2 + y^2 - 4x + 3y - 11/4 = 0\]

7) Determine whether the relation is a function. Give the domain and range:

\[\left\{(3,-2),(4,-3),(5,-2),(6,-1)\right\}\]

8) Evaluate the function at the given values and simplify:

\[f(x) = -2x^2 - 7x - 6\]

   a. \(f(-2)\)   b. \(f(x + h)\)   c. \(f(2) - f(-2)\)

9) Use the graph to give the domain, range, intercepts (if any), and function values. (2.2)

10) Use the graph to give the domain, range, intercepts (if any), and function values. (2.2)

11) Use the graph to determine the domain, range, intercepts (if any), intervals where the function is increasing and decreasing, the values for which \(f(x)=0\), and whether the function is even, odd or neither. (2.3)

12) Find the simplify the difference quotient

\[\frac{f(x+h) - f(x)}{h}, h \neq 0\] (2.1)

   a. \(f(x) = -4x - 3\)   b. \(f(x) = x^2 - 3x\)

13) Find the average rate of change of the function from \(x_1\) to \(x_2\). (2.3)

   a. \(f(x) = x^2 - x\) from \(x_1 = -2\) to \(x_2 = 2\)

   b. \(g(x) = \sqrt{x - 2}\) from \(x_1 = 11\) to \(x_2 = 18\)
14) Use transformations to graph. Plot at least three points of the transformed function. (2.5)

a. \( f(x) = -(x-2)^2 - 3 \)

b. \( g(x) = \frac{1}{2}\sqrt{-x+2} \)

c. \( h(x) = -2|\sqrt{x+1}| - 2 \)

15) Graph the following piecewise function. Find the domain of the function, and find \( f(-1) \) and \( f(0) \)

\[
f(x) = \begin{cases} 
  x^2 - 4 & \text{for } x < -2 \\
  2 & \text{for } x = -1 \\
  x + 6 & \text{for } x > -1 
\end{cases}
\]

16) Solve, and give the answer in the appropriate notation.

a. \( 2x - 3y = 8 \)
  \( 3x + 2y = -1 \)

b. \( \frac{x}{6} - \frac{y}{3} = \frac{1}{3} \)
  \( -x + 2y = -3 \)

c. \( 4x^2 - y^2 = 4 \)
  \( 4x^2 + y^2 = 4 \)

d. \( x^2 + y^2 = 5 \)
  \( 3x - y = 5 \)

17) Suppose that a company purchased a new car for $30,000 and chooses to depreciate the car using straight-line method over 8 years. Write a linear model that expresses the value of the car as a function of its age \( x \). What is the implied domain of this function? After how many years will the car have a value of $7,500? (3.2)

18) Use the vertex and intercepts to sketch the graph. Give the equation for the axis of symmetry, and give the domain and range. (3.3)

a) \( f(x) = 2(x-1)^2 + 3 \)

b) \( f(x) = 2x^2 - 7x - 4 \)

19) Find the equation of the quadratic polynomial that has vertex at (1,4) and passes through the point (-1,-8). (3.3)

20) Solve the following inequalities. (3.5)

a) \( 3x^2 + 10x \leq 8 \)

b) \( x^2 < 3x + 15 \)