All the same
solutions
x-intercepts
zeros
roots

1. Solve the equation by factoring

$x^2 - 4x - 5 = 0$

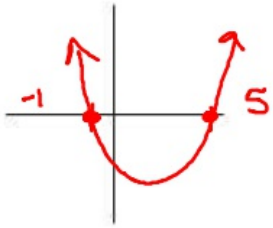
$(x+1)(x-5) = 0$

m: -5
A: -4
1, -5

$x+1=0$ $x-5=0$

$x=-1$ $x=5$

Sketch the graphs of the examples above
Label the *x*-intercepts on each graph



2. Write the quadratic equation with the given the solutions

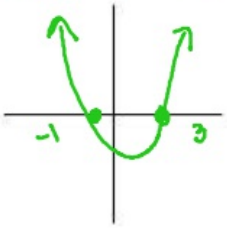
$x = 3$ and $x = -1$

$x-3=0$ $x+1=0$

$(x-3)(x+1)=0$

$x^2+1x-3x-3=0$

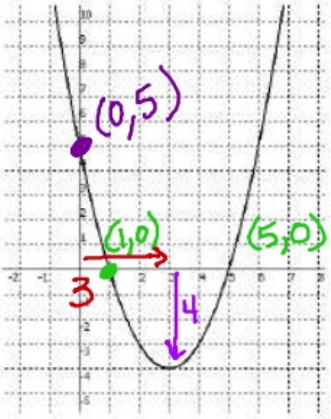
$x^2-2x-3=0$



---

3. Given the graph of $f(x)$

$f(x) =$



a) State the *y*-intercept (0,5)

b) State the *x*-intercepts (1,0) and (5,0)

c) Write the equation of the function

$f(x) = (x-3)^2 - 4$ in vertex form

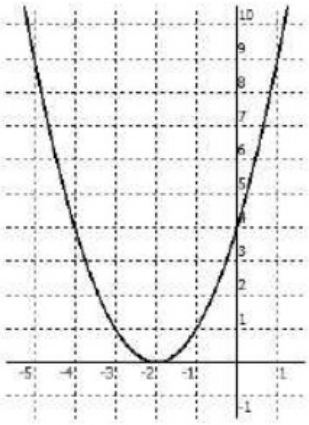
$f(x) = (x-1)(x-5)$ in factored form

$f(x) = x^2 - 6x + 5$ in standard form

---

4. Given the graph of $g(x)$

$g(x) =$



a) State the *y*-intercept (0,4)

b) State the *x*-intercept (-2,0)

c) Write the equation of the function

$g(x) = (x+2)^2$ in vertex form

$g(x) = (x+2)(x+2)$ in factored form

$g(x) = x^2 + 4x + 4$ in standard form

Graphing using a calculator

1. Graph $f(x) = x^2 - x - 12$

   Press the [Y =] key on the top of the calculator.
   Press [CLEAR] in Y_1.

2. Type in the following equation: $Y_1 = x^2 - x - 12$.

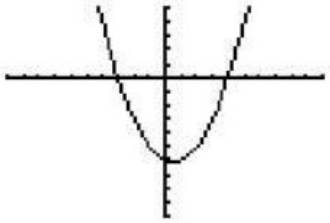
   Use the *blue* [–] subtract button on the side (not the *gray* [(-)] negative button at the bottom)

3. Press the [WINDOW] button.
   Type in the following values

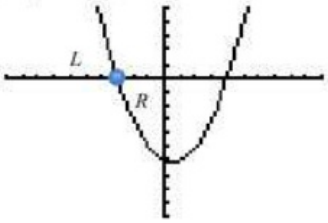
   x-min: -10
   x-max: 10
   x-scl: 1

   y-min: -20
   y-max: 10
   y-scl: 2

   Press [GRAPH].

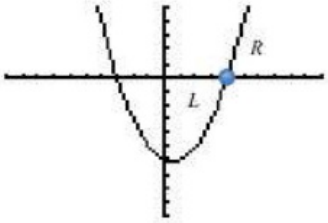


4. To find the *x*-intercepts *(otherwise called the **Zeros** of the function or **Root** of the function)*
   Press the [2nd] [TRACE] button.
   Press the down arrow to go to [2: zero] then press [ENTER]



   At the bottom of the screen you should see: Left Bound?
   Press the left arrow button to the left side of the *left* x-intercept and press [ENTER]
   At the bottom of the screen you should see: Right Bound?
   Press the right arrow button to the right side of the same root and press [ENTER]
   At the bottom of the screen you should see: Guess? press [ENTER]

   At the bottom of the screen you should see: Zero X = -3 Y = 0



   Find the right x-intercept
   Press the [2nd] [TRACE] button.
   Press the down arrow to go to [2: zero] then press [ENTER]

   At the bottom of the screen you should see: Left Bound?
   Press the right arrow button to the left side of the *right* x-intercept and press [ENTER]
   At the bottom of the screen you should see: Right Bound?
   Press the right arrow button to the right side of the same root and press [ENTER]
   At the bottom of the screen you should see: Guess? press [ENTER]

   At the bottom of the screen you should see: Zero X = 4 Y = 0

5. $h(x) = x^2 + 6x + 5$

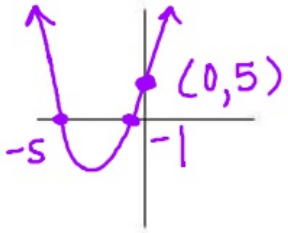
$h(0) = (0)^2 + 6(0) + 5$

$h(0) = 5$

y-intercept: (0 , 5)

x-intercept(s): (−5 , 0) (−1 , 0)

$h(x) = (x+5)(x+1)$ in factored form

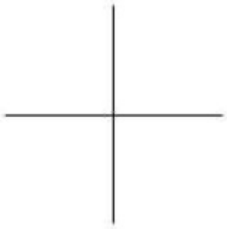


6. $f(x) = -x^2 + 2x + 8$

y-intercept: (,)

x-intercept(s): (,) (,)

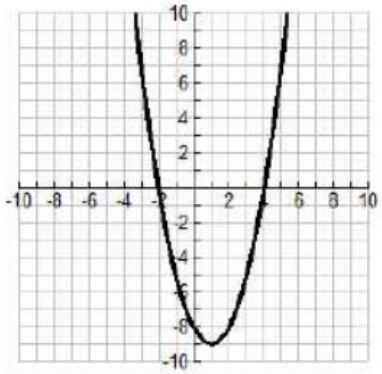
$f(x) =$ in factored form



Name: _____
period: _____

Quadratic equations and their graphs

1. **Given the graph of** $f(x)$ $f(x) =$



   a) State the y-intercept (,)

   b) State the x-intercepts (,) and (,)

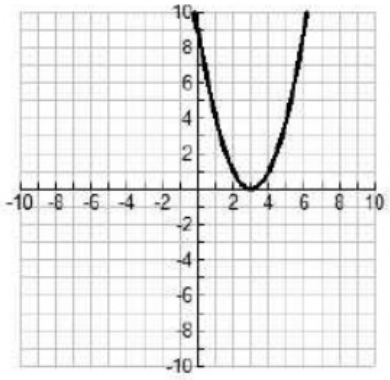
   c) Using the x-intercepts, write the equation of the function

   $f(x) =$ in vertex form

   in factored form

   in standard form

2. **Given the graph of** $g(x)$ $g(x) =$



   a) State the y-intercept (,)

   b) State the x-intercepts (,) and (,)

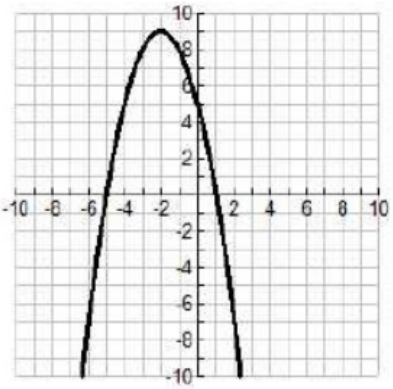
   c) Using the x-intercepts, write the equation of the function

   $g(x) =$ in vertex form

   in factored form

   in standard form

3. **Given the graph of** $h(x)$ $h(x) =$



   a) State the y-intercept (,)

   b) State the x-intercepts (,) and (,)

   c) Using the x-intercepts, write the equation of the function

   $h(x) =$ in vertex form

   in factored form

   in standard form

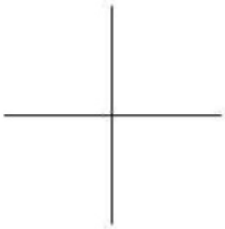
Graph each function using calculator. Fill in the appropriate information for each graph. Label the graph with intercept points and vertex.

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

y-intercept: (,)

x-intercept(s): (,) (,)

$f(x)=$ in factored form

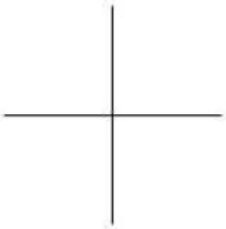


5. $g(x)=-x^2-9x-14$

y-intercept: (,)

x-intercept(s): (,) (,)

$g(x)=$ in factored form

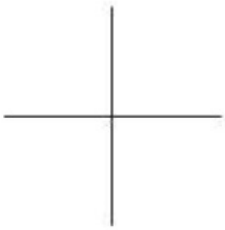


6. $h(x)=x^2-6x-7$

y-intercept: (,)

x-intercept(s): (,) (,)

$h(x)=$ in factored form

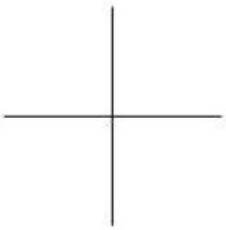


7. $f(x)=3x^2-18x+6$

y-intercept: (,)

x-intercept(s): (,) (,)

round values to two decimal places

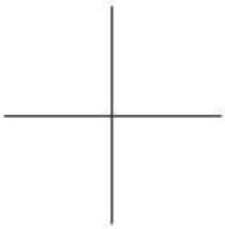


8. $g(x)=3x^2-x-2$

y-intercept: (,)

x-intercept(s): (,) (,)

round values to two decimal places



9. $h(x)=-x^2+6x-4$

y-intercept: (,)

x-intercept(s): (,) (,)

round values to two decimal places