6.2 Intercepts and Zeros Name:_____ Hour:_____

For each of the following find the axis of symmetry, vertex, y-intercept, and two additional points to graph the given function. Once the function is graphed, state the solutions.

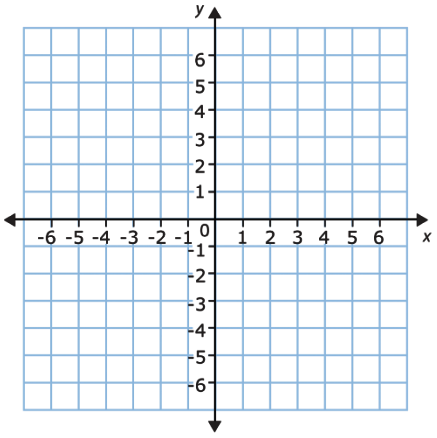
1. $y = x^2 - 4x$

Axis of Symmetry:

Vertex:

Y-Intercept:

Two Points:



Solutions:

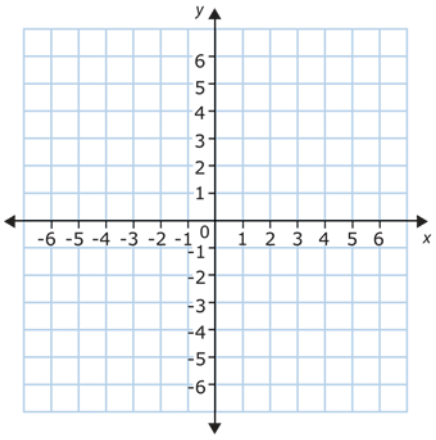
2. $y = -x^2 + 6x - 5$

Axis of Symmetry:

Vertex:

Y-Intercept:

Two Points:



Solutions:

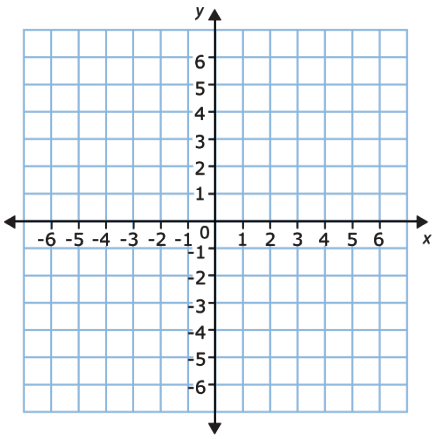
3. $y = x^2 + 4x$

Axis of Symmetry:

Vertex:

Y-Intercept:

Two Points:



Solutions:

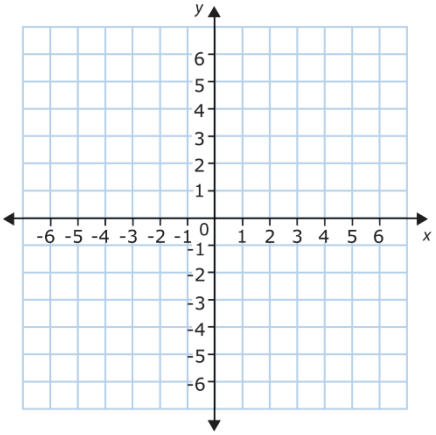
4. $y = 2x^2 + 4x$

Axis of Symmetry:

Vertex:

Y-Intercept:

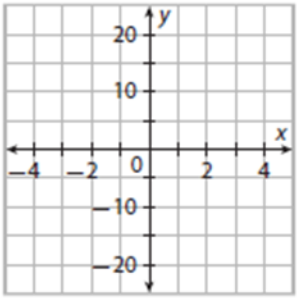
Two Points:



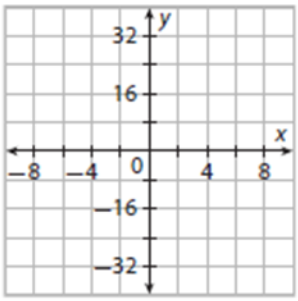
Solutions:

Solve each equation by graphing the related function and finding its zeros.

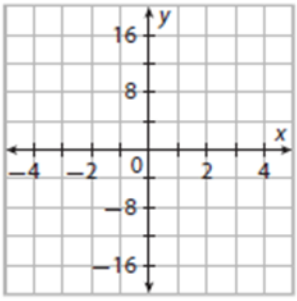
1. $3x^2 - 9 = -6$



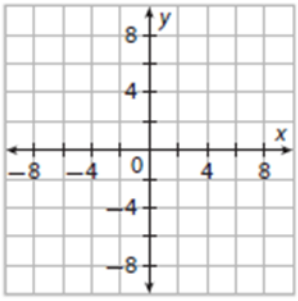
2. $2x^2 - 9 = -1$



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

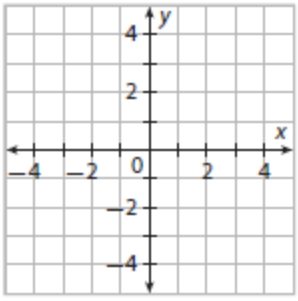


4. $7x + 10 = -x^2$

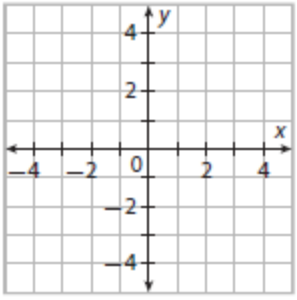


Solve each by finding intersections of two functions.

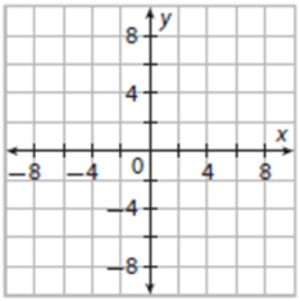
5. $2(x-3)^2 - 4 = 0$



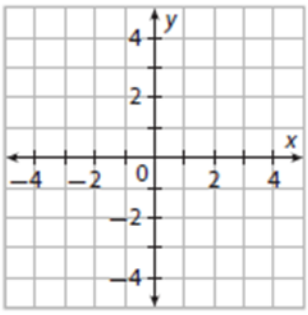
6. $(x+2)^2 - 4 = 0$



7. $-(x-3)^2 + 4 = 0$



8. $(x+2)^2 - 2 = 0$



9. **Nature** A bird is in a tree 30 feet off the ground and drops a twig that lands on a rosebush 25 feet below. The function $h(t) = -16t^2 + 30$, where t represents the time in seconds, gives the height h, in feet, of the twig above the ground as it falls. When will the twig land on the bush?

10. **Nature** A monkey is in a tree 50 feet off the ground and drops a banana, which lands on a shrub 30 feet below. The function $h(t) = -16t^2 + 50$, where t represents the time in seconds, gives the height h, in feet, of the banana above the ground as it falls. When will the banana land on the shrub?

11. **Counterexamples** Pamela says that if the graph of a function opens upward, then the related quadratic equation has two solutions. Provide a counterexample to refute Pamela's claim.