

Quadratic Equations

1010 Final Review Session

Review at least one problem from each section

*Problems taken from: Beginning and Intermediate Algebra, by Tyler Wallace is licensed under a Creative Commons Attribution 3.0 Unported License. <http://wallace.ccfaculty.org/book/book.html>.

Intermediate Algebra 9th Edition, by Marvin L. Bittinger & David J. Ellenbogen (Publisher Pearson)

1) Part I: Finding zeros/x intercepts/solutions to Quadratic Equations

Find the x intercepts of the function:

$$f(x) = 3x^2 - 15x + 18$$

2) Find all the zeros of the quadratic equation:

$$8x + 32 = 4x^2$$

3) Find all solutions of the equation:

$$x(x - 3) = x - 9$$

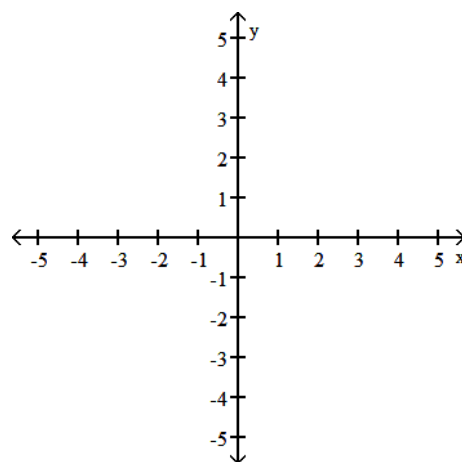
4) Solve for x:
 $6x^2 + 7x - 3 = 0$

5) Find all the zeros of the quadratic equation:
 $3x^2 + 5x + 2 = 7$

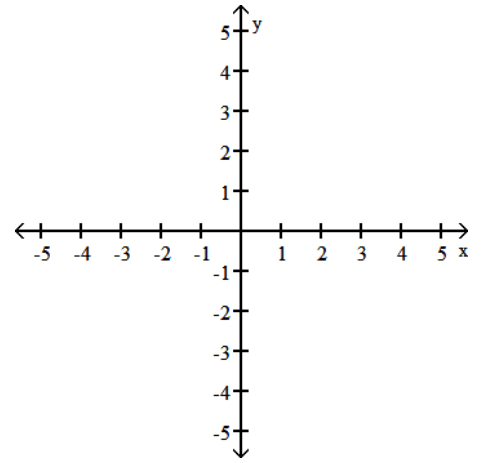
Part II: Graphing Quadratic Functions

For each function, a) find the vertex and axis of symmetry, b) find at least one other point on the graph c) graph the function, labeling points.

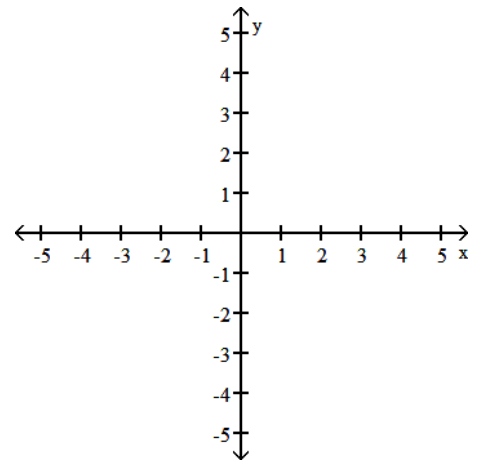
6)
 $f(x) = x^2 + 4x + 5$



7) $f(x) = 4(x-3)^2 - 2$



8) $f(x) = -x^2 + 2x + 3$



9) Part III: Solving Word Problems that Involve Quadratic Equations

The length of a rectangle is 2 ft longer than the width. The area of the rectangle is 48 ft^2 . What are the dimensions of the rectangle?

10) The number of pounds of milk per day recommended for a calf that is x weeks old can be approximated by $p(x)$, where

$$p(x) = -0.2x^2 + 1.3x + 6.2$$

When is the calf's milk consumption greatest and how much milk does it consume at that time?

11)

A picture measures 10 inches by 7 inches is placed in a frame of uniform width. If the area of the frame and picture together is 208 square inches, what is the width of the frame?

12) Suppose that a flare is launched upward with an initial velocity of 80 ft/sec from a height of 224 ft. Its height in feet, $h(t)$, after t seconds is given by

$$h(t) = -16t^2 + 80t + 224$$

How long will it take the flare to reach the ground? At what time does it reach its maximum height, and what is the maximum height?

13)

An architect is designing an atrium for a hotel. The atrium is to be rectangular with a perimeter of 720 ft of brass piping. What dimensions will maximize the area of the atrium?