Name: Date:

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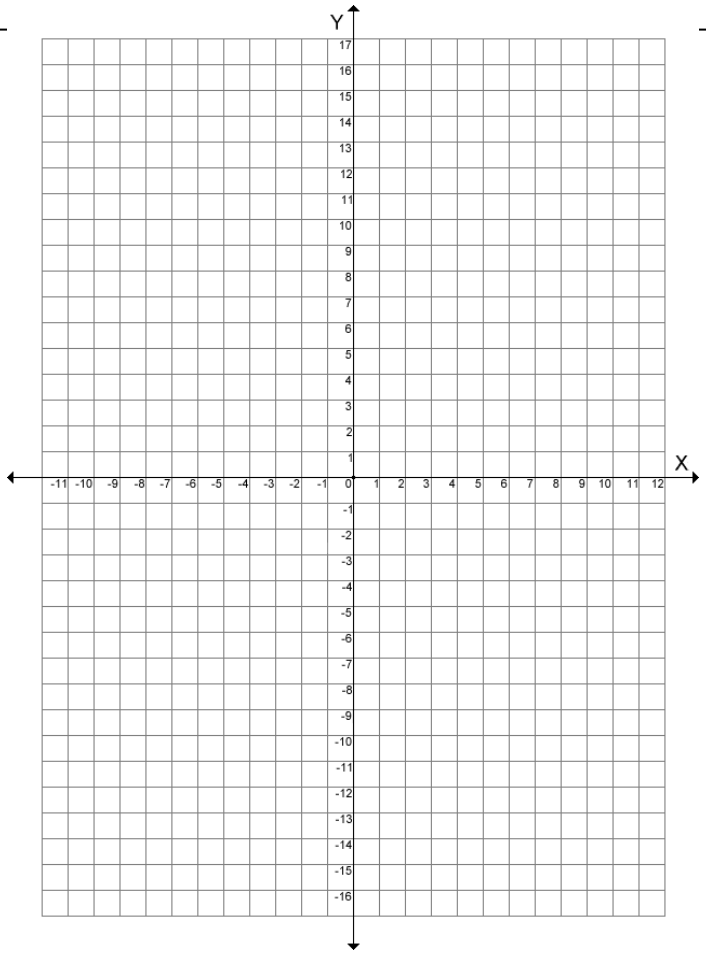
Quiz: Parabolas and Quadratics – Level 2

1) Solve the system of equations graphically.

$y = x^2 - 2x - 6$

$y = -x + 6$



2) Solve by completing the square. *Leave your answer in simplest radical form*.

$x^2 - 10x + 13 = 0$

3) Solve using the quadratic formula. *Round your answers to the nearest hundredth*.

$2x^2 + 6x - 9 = 0$

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

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4) Solve by completing the square. *Solutions are rational so no rounding needed*.

$4x^2 - 16x + 15 = 0$

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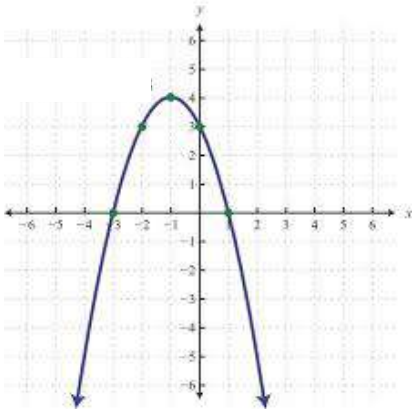
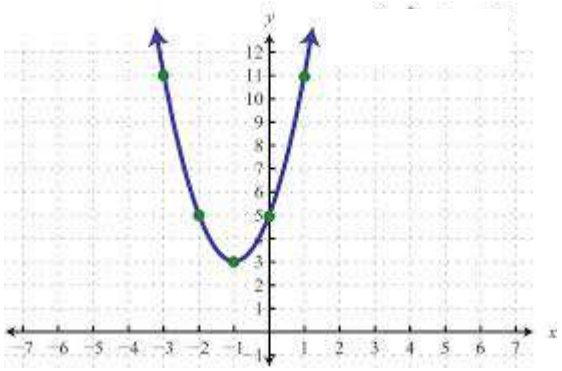
5) Convert the equation from standard form to vertex form. Then, name the vertex.

$y - 3x^2 - 18x + 1 = 0$

6) Write the equation of each parabola. Use vertex form.





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7) A student is working on converting an equation into vertex form. The first few steps are shown below, with missing value labeled as *w and z.* Find *w* and z.

$$y = 2x^2 + 5x + 30$$

$$y = 2(x^2 + \tfrac{5}{2}x \quad\quad) + 30$$

$$y = 2(x^2 + \tfrac{5}{2}x + w) + 30 + z$$

8) Solve the system of equations algebraically. Use the substitution method.

$y = x^2 + 7x - 3$
$3x + 2y = -42$

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9) For the parabola with equation expressed below, find each. *Use an algebraic solution (No GC).*

$$y = 3(x + 4)^2 - 27$$

a) y-intercept

c) roots

10) An object is launched upward from a platform 128 feet high with an initial velocity of 112 ft/sec. Use the formula: $h(t) = -16t^2 + v_0t + s$ *to answer the questions below. Show all work algebraically (no GC).*

a) How long will it take the object to reach maximum height?
b) What is the maximum height?
c) How long until the object reaches the ground?

BONUS

A flare is launched from a lifeboat at an initial height of 4 feet and an initial velocity of 150 feet per second. For how many seconds will the flare be at or above 200 feet? *Round to the nearest hundredth.*