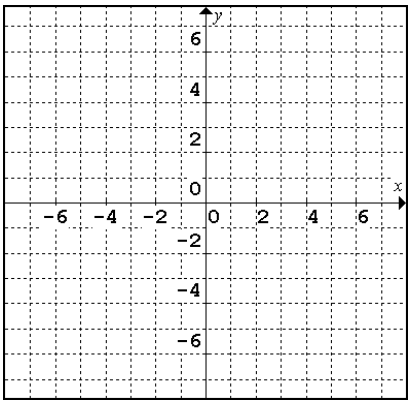
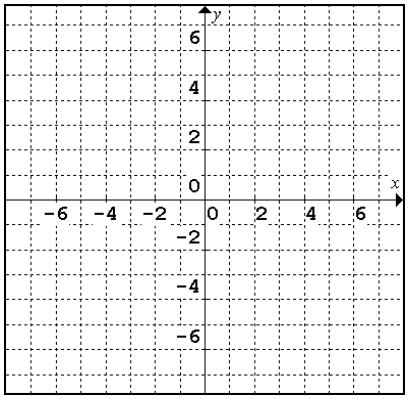
Algebra 1 – Quadratic Functions Test Name:_____

1. Make an accurate sketch of each function.

a) $f(x) = (x-2)^2 - 3$



b) $f(x) = 2x^2 + 1$



2. What equation would make $f(x) = x^2$ shift right 6 units?

3. What equation would make $f(x) = x^2$ shift up 1.5 units?

4. What equation would shift $f(x) = x^2$ up two units and flip it upside down?

Find the vertex and axis of symmetry for the graph of each function.

5. $y = (x + 1)^2 - 4$

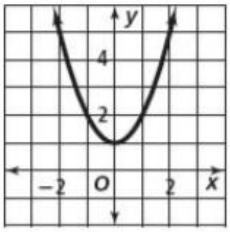
V (,) axis: x = _____

6. $y = 2(x - 3)^2 - 2$

V (,) axis: x = _____

Identify the vertex and the axis of symmetry of each parabola.

7.



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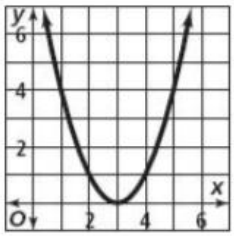
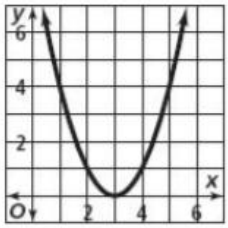


9.



Find the vertex and axis of symmetry for the graph of each function.

10. $y = x^2 - 8x + 18$

V (,) axis: x = _____

11. $y = x^2 + 12x + 16$

V (,) axis: x = _____

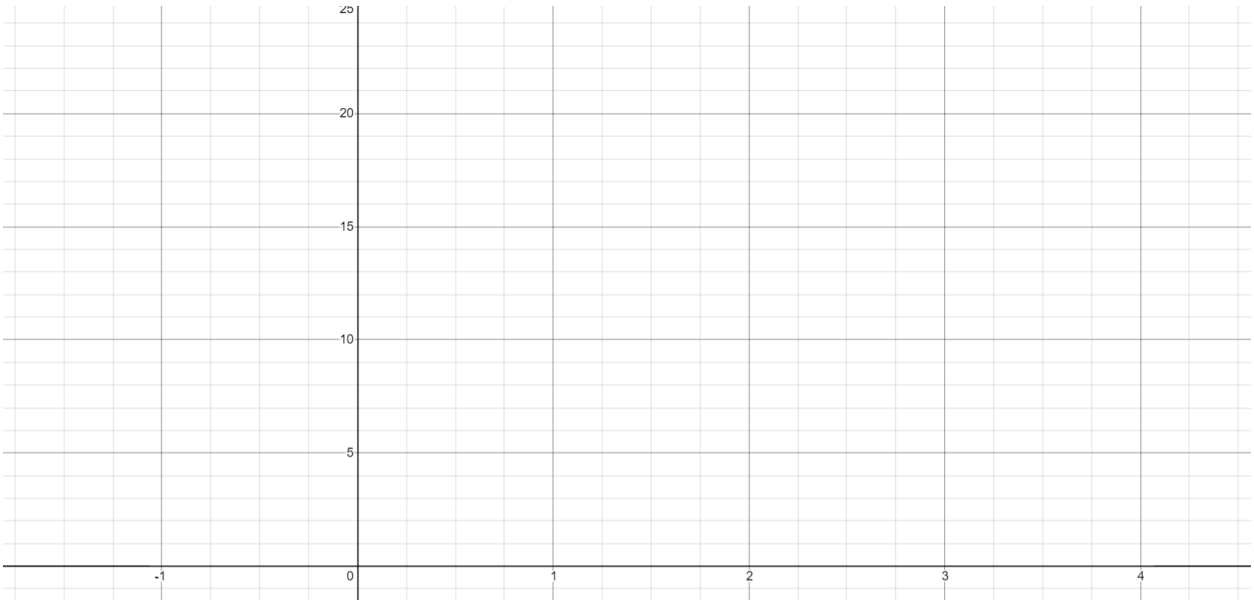
12. Use the equation $\boldsymbol{h(t) = -16t^2 + vt + h_o}$ (feet) when answering the question.

A ball is thrown upward vertically from a height of 8 feet at an initial velocity of 32 feet per second.

A) At what time will the ball be at its greatest height?

B) What will the greatest height of the ball be?

BONUS: Graph the function.



13. Suppose you are tossing an apple up to a friend on a third-story balcony. After t seconds, the height of the apple in feet is given by $\boldsymbol{h = -16t^2 + 38.4t + 0.96}$.
Your friend catches the apple just as it reaches its highest point. How long does the apple take to reach your friend?

BONUS: At what height above the ground does your friend catch it?