Please have out your homework!

Algebra 1   Unit 9: Quadratic Functions   Practice
Day 3 - Characteristics of Quadratic Functions   Name:_____

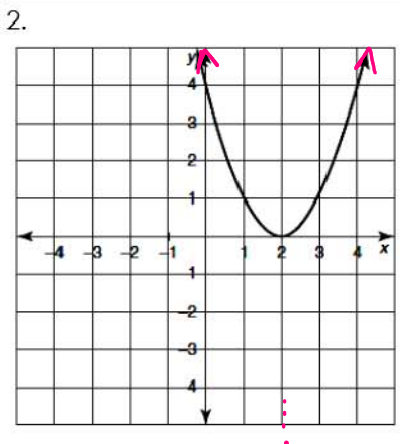**Practice Assignment**   Date:_____ Block:_____

Identify all of the characteristics listed for the following graphs.

1.

L → P
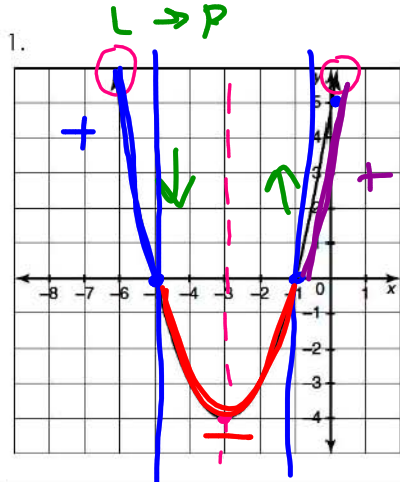
Domain: all real #s $-\infty < x < \infty$ Range: $y \geq -4$ $-4 \leq y < \infty$

Vertex: $(-3, -4)$ Axis of Sym. $x = -3$

Y-Intercept: $(0, 5)$ Zeroes: $x = -5$ + $x = -1$

Extrema: minimum   Max/Min Value: $y = -4$

Int of Inc: $x > -3$ Int of Dec: $x < -3$

Positive: $x < -5 \cup x > -1$ Negative: $-5 < x < -1$

End Behavior: As x → -∞, f(x) → ∞.   As x → ∞, f(x) → ∞

2.

Domain: all reals   Range: $y \geq 0$ $0 \leq y < \infty$

Vertex: $(2, 0)$ Axis of Sym. $x = 2$

Y-Intercept: $(0, 4)$ Zeroes: $x = 2$

Extrema: minimum   Max/Min Value: $y = 0$

Int of Inc: $x > 2$ Int of Dec: $x < 2$

Positive: all reals   Negative: none

End Behavior: As x → -∞, f(x) → ∞.   As x → ∞, f(x) → ∞

3.
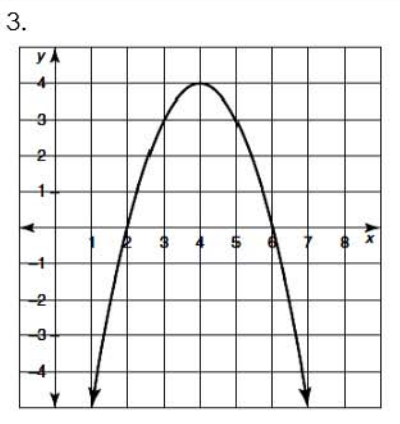
Domain: _____   Range: _____

Vertex: _____   Axis of Sym._____

Y-Intercept: _____   Zeroes: _____

Extrema: _____   Max/Min Value: _____

Int of Inc: _____   Int of Dec: _____

Positive: _____   Negative: _____

End Behavior: As x → -∞, f(x) → _____.   As x → ∞, f(x) → _____

Algebra 1   Unit 9: Quadratic Functions   Practice

Problems 4 – 9: Use the given description to create a <u>rough sketch</u> of a quadratic function. Your graphs might look different than mine, but they must meet the characteristic described below. Start by placing your characteristics on the graph and create the sketch after that.
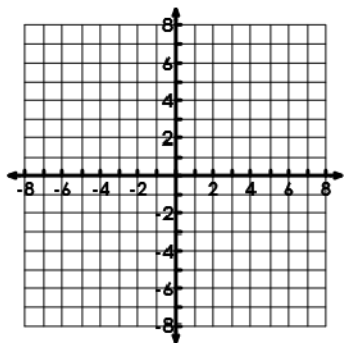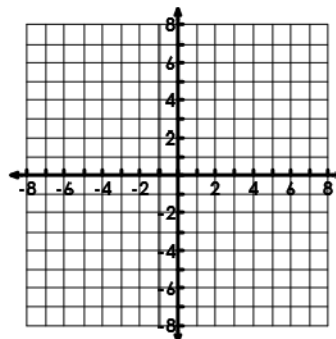
4. Parabola that opens up and has a y-intercept of (0, 5).
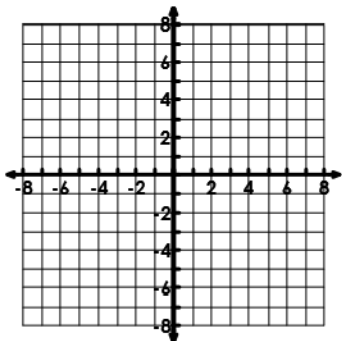
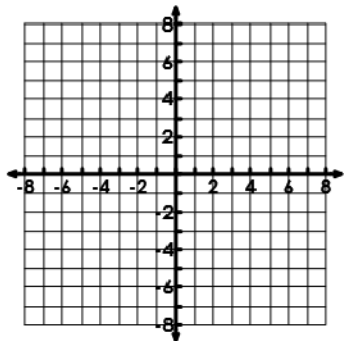5. Parabola that opens down and has x-intercepts of 3 and -1.
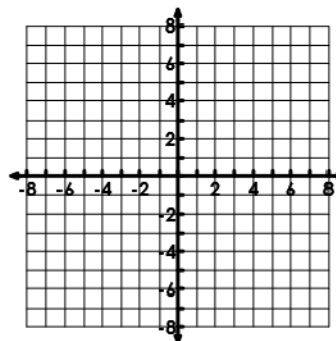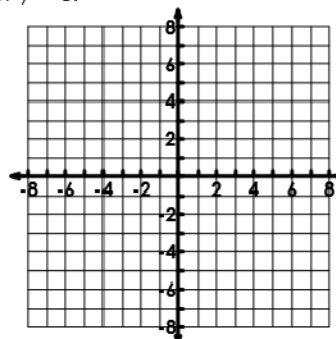
6. Parabola with end behavior that approaches -∞

7. Parabola with a negative part of the graph between $-2 \le x \le 2$ and has a vertex of (-3, 6).

8. Parabola with a maximum of 3 and zeros of 0 and 4.

9. Parabola with an axis of symmetry of x = -1 and a range of $y \ge -5$.

Algebra 1   Name:

Unit 9 Quiz 1 Review

1) What transformation of the parent function, $f(x) = x^2$, is the function $f(x) = -(x+2)^2$?

    A   Reflect across the x-axis and translate right 2.

    C   Reflect across the x-axis and translate left 2.

    B   Reflect across the y-axis and translate up 2.

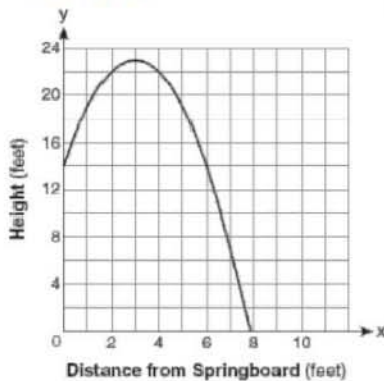   **D**   Reflect across the y-axis and translate down 2.

2) What is the **vertex** of the quadratic function $y = -3(x+5)^2 - 4$?

    A. (-5, -4)
    B. (-5, 4)
    C. (5, -4)
    D. (5, 4)

3) Which quadratic function opens **up**?

    A. $y = -x^2 + 3$
    B. $y = -(x+3)^2$
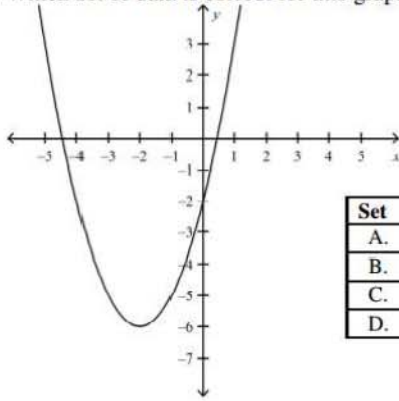   C. $y = -3x^2$
    D. $y = x^2 - 3$

4) A swim team member performs a dive from a 14-foot-high springboard. The parabola below shows the path of her dive.

Which equation represents the axis of symmetry?

Distance from Springboard (feet)

    a. $x = 3$
    b. $y = 3$
    c. $x = 23$
    d. $y = 23$

5) Which set of data is correct for this graph?

Set	Axis of Symmetry	Vertex	Domain	Range
A.	$x = -2$	$(-2, 6)$	$x \in R$	$y \in R$
B.	$x = -6$	$(-6, -2)$	$-8 \le x \le 4$	$-8 \le y$
C.	$x = -2$	$(-2, -6)$	$x \in R$	$-6 \le y$
D.	$x = 2$	$(2, 6)$	$-6 \le x \le 2$	$-6 \le y$

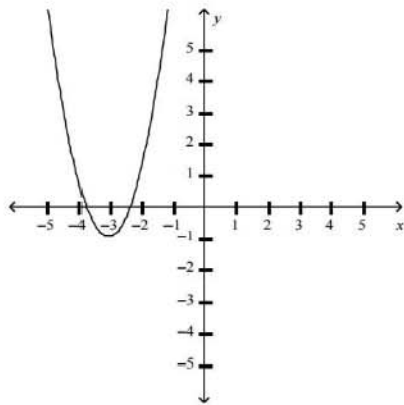6) Which function includes a translation of 3 units to the left?

a. $f(x) = (x + 3)^2 + 1$

b. $f(x) = 3x^2 + 1$

c. $f(x) = (x - 3)^2 + 1$

d. $f(x) = (x + 1)^2 - 3$

7) Which function matches the graph?

a. $f(x) = -2(x - 3)^2 + 1$

b. $f(x) = 2(x + 3)^2 - 1$

c. $f(x) = (x + 3)^2 + 2$

d. $f(x) = \frac{1}{2}(x - 3)^2 - 1$

8) Identify the following a values as a vertical stretch, a vertical shrink, or neither.

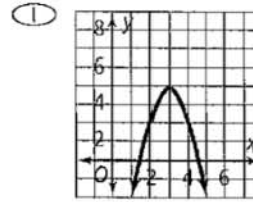$a = \frac{2}{3}$ $a = -5$ $a = -0.7$ $a = \frac{6}{5}$ $a = -1$
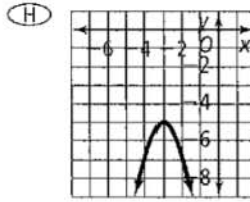
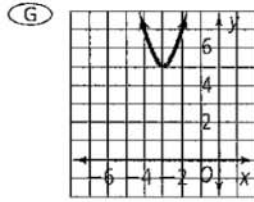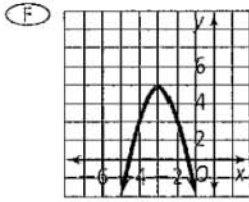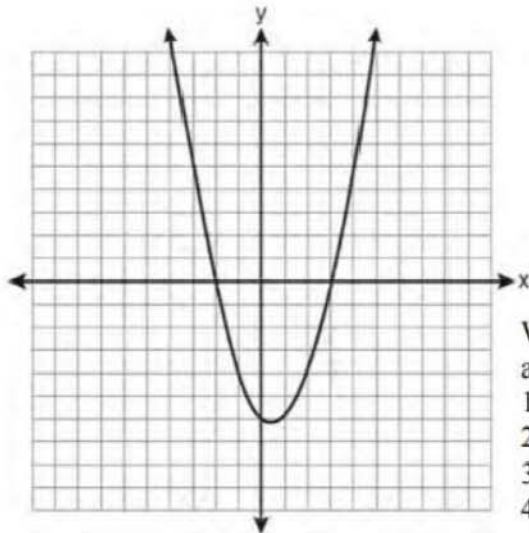$a = \frac{3}{4}$ $a = -\frac{5}{4}$ $a = 1$ $a = 1.1$ $a = -0.7$

9) Which is the graph of the function $f(x) = -2(x + 3)^2 + 5$?
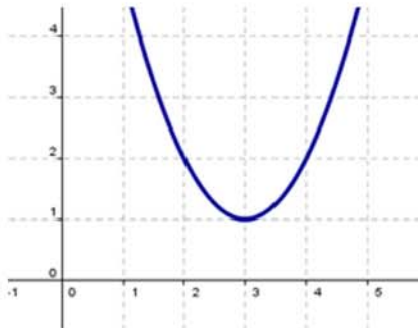
F ⬚   G ⬚   H ⬚   I ⬚

10) A student correctly graphed the parabola shown below to solve a given quadratic equation.

What are the roots of the quadratic equation associated with this graph?

1)   −6 and 3
2)   −6 and 0
3)   −3 and 2
4)   −2 and 3

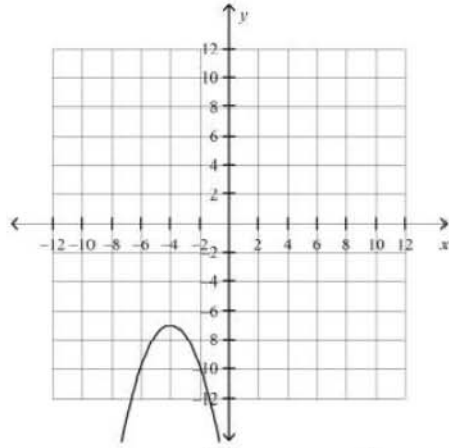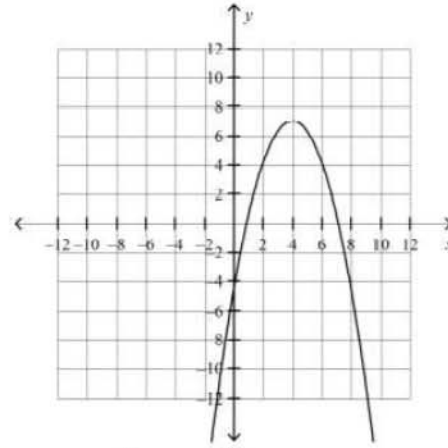11) Over which interval is the graph below increasing?

a) $x > 3$

b) $x > 1$

c) $x < 3$

d) $x < 1$

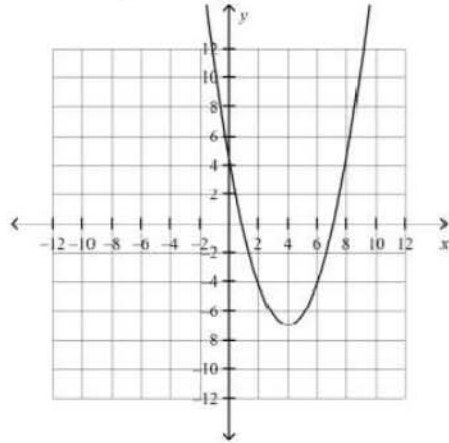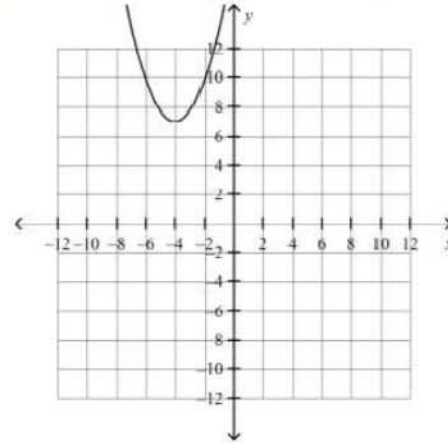11) Which graph represents the quadratic function $y = \dfrac{5}{7}(x-4)^2 - 7$?

A

C

B

D

① C

② A

③ D

④ A

⑤ C

⑥ A

⑦ B

⑧

⑨ F

⑩ 4

⑪ A

⑪ B

$a = \frac{2}{3}$ shrink

$a = -5$ stretch

$a = -0.7$ shrink

$a = \frac{6}{5}$ stretch

$a = -1$ neither

$a = \frac{3}{4}$ shrink

$a = -\frac{5}{4}$ stretch

$a = 1$ neither

$a = 1.1$ stretch

$a = -0.7$ shrink