

Alg2: GRAPHING QUADRATIC FUNCTIONS IN STANDARD FORM **HOMEWORK**

For each of the following find the vertex, axis of symmetry, x-intercept, y-intercept, maximum or minimum and it's value, domain and range using the specified notation.

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

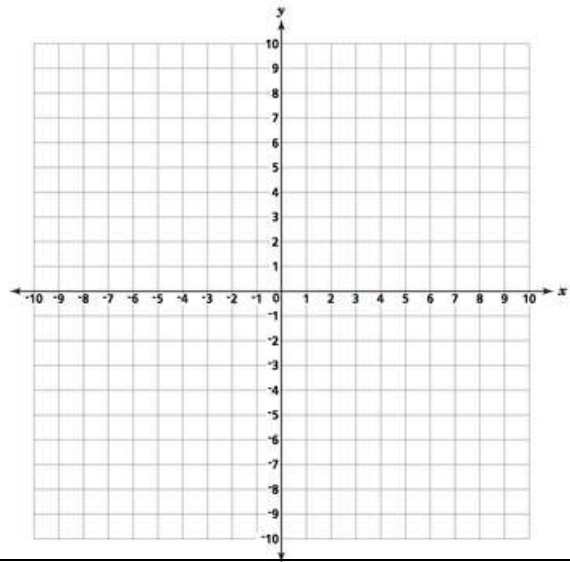
vertex \_\_\_\_\_ AOS \_\_\_\_\_

x-inter \_\_\_\_\_ y-inter \_\_\_\_\_

maximum or minimum? Value \_\_\_\_\_

domain \_\_\_\_\_ range \_\_\_\_\_

**interval notation**



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

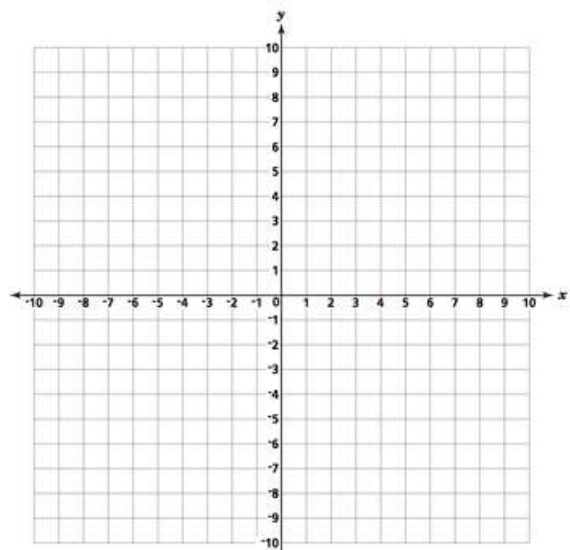
vertex \_\_\_\_\_ AOS \_\_\_\_\_

x-inter \_\_\_\_\_ y-inter \_\_\_\_\_

maximum or minimum? Value \_\_\_\_\_

domain \_\_\_\_\_ range \_\_\_\_\_

**set notation**



3.  $f(x) = 3x^2 - 6x + 4$

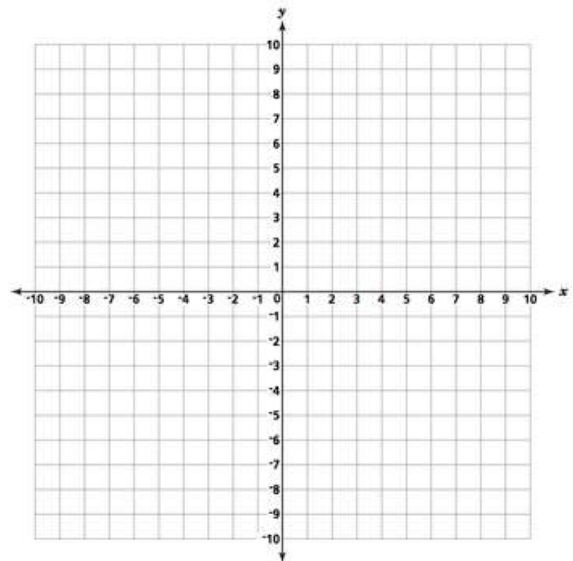
vertex \_\_\_\_\_ AOS \_\_\_\_\_

x-inter \_\_\_\_\_ y-inter \_\_\_\_\_

maximum or minimum? Value \_\_\_\_\_

domain \_\_\_\_\_ range \_\_\_\_\_

**interval notation**



4.  $f(x) = -x^2 - 2x - 1$

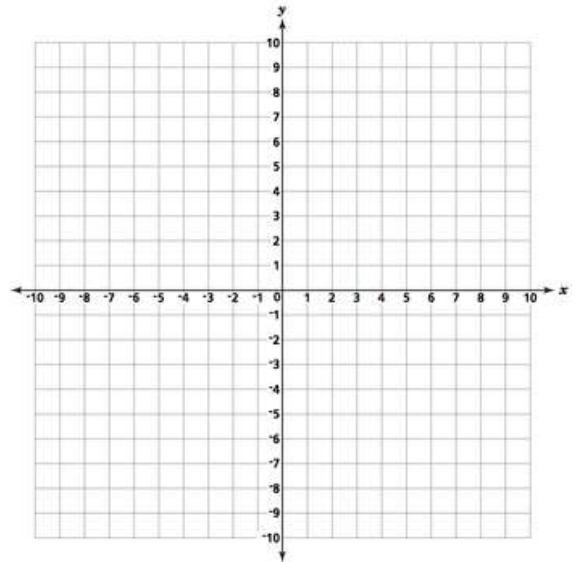
vertex \_\_\_\_\_ AOS \_\_\_\_\_

x-inter \_\_\_\_\_ y-inter \_\_\_\_\_

maximum or minimum? Value \_\_\_\_\_

domain \_\_\_\_\_ range \_\_\_\_\_

**set notation**



5.  $f(x) = x^2 - 10x + 9$  \*extend the graph

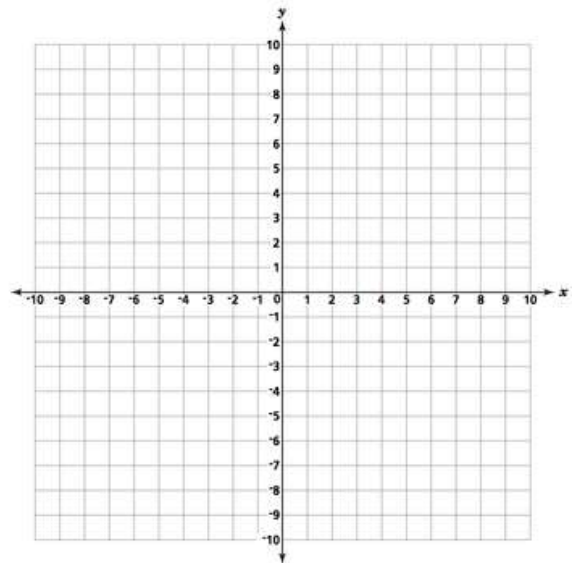
vertex \_\_\_\_\_ AOS \_\_\_\_\_

x-inter \_\_\_\_\_ y-inter \_\_\_\_\_

maximum or minimum? Value \_\_\_\_\_

domain \_\_\_\_\_ range \_\_\_\_\_

**interval notation**



6.  $f(x) = -6x^2 - 4x - 5$  \*do not graph this one

vertex \_\_\_\_\_ AOS \_\_\_\_\_

y-inter \_\_\_\_\_

maximum or minimum? Value \_\_\_\_\_

7.  $f(x) = x^2 - 9$  \*note: the middle term is missing

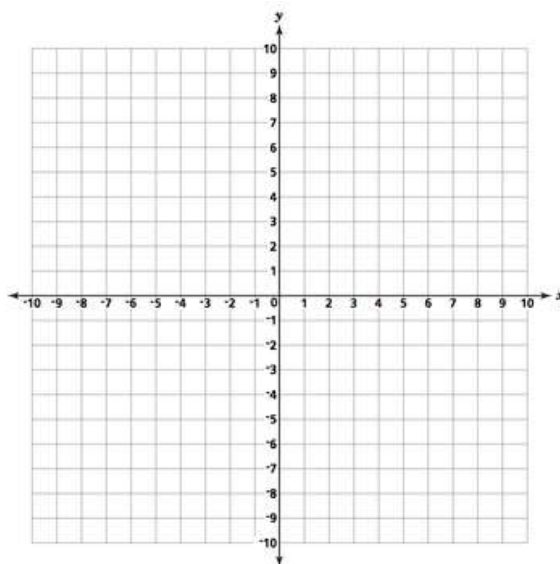
vertex \_\_\_\_\_ AOS \_\_\_\_\_

x-inter \_\_\_\_\_ y-inter \_\_\_\_\_

maximum or minimum? Value \_\_\_\_\_

domain \_\_\_\_\_ range \_\_\_\_\_

**interval notation**



8.  $f(x) = 3x^2 + 6$

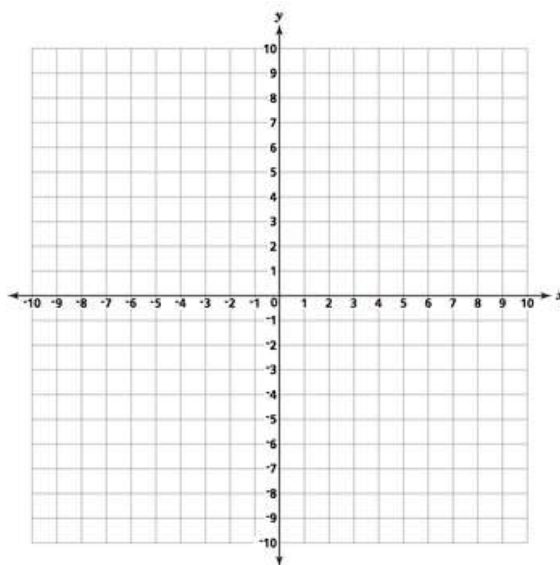
vertex \_\_\_\_\_ AOS \_\_\_\_\_

x-inter \_\_\_\_\_ y-inter \_\_\_\_\_

maximum or minimum? Value \_\_\_\_\_

domain \_\_\_\_\_ range \_\_\_\_\_

**set notation**



Write the quadratic equation in standard form

9.  $f(x) = (x - 3)(x + 2)$

10.  $f(x) = 3(x - 2)^2 + 5$

11.  $f(x) = -2(x + 4)^2 - 7$

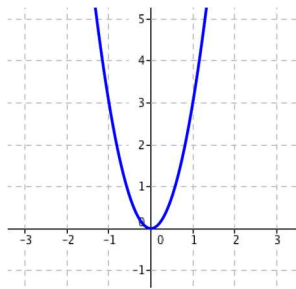
12.  $f(x) = 3(x - 6)(x + 2)$

13.  $f(x) = 5(x + 6)^2 - 1$

14.  $f(x) = (x - 1)^2$

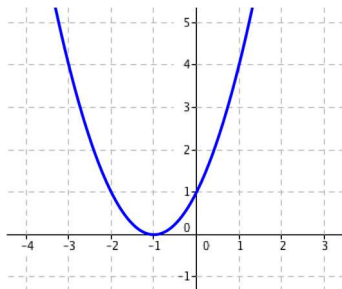
ANSWERS

1.



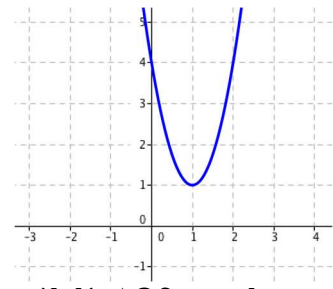
vertex:  $(0,0)$ , AOS:  $x = 0$   
 x-int:  $(0,0)$  y-int:  $(0,0)$ , Min = 0  
 D:  $(-\infty, \infty)$ , R:  $[0, \infty)$

2.



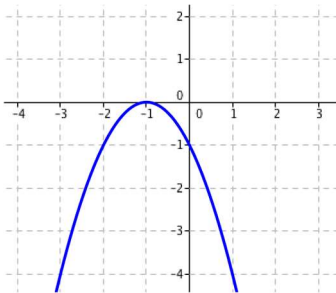
vertex:  $(-1,0)$ , AOS:  $x = -1$   
 x-int:  $(-1,0)$  y-int:  $(0,1)$ , Min = 0  
 D:  $\{x|x \in R\}$ , R:  $\{y|y \geq 0\}$

3.



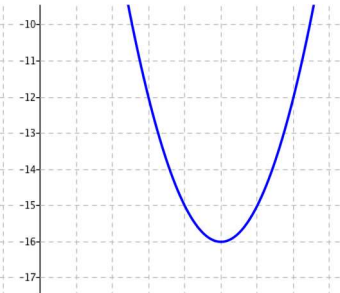
vertex:  $(1,1)$ , AOS:  $x = 1$   
 x-int: none y-int:  $(0,4)$ , Min = 1  
 D:  $(-\infty, \infty)$ , R:  $[1, \infty)$

4.



vertex:  $(-1,0)$ , AOS:  $x = -1$   
 x-int:  $(-1,0)$  y-int:  $(0,-1)$ , Max = 0  
 D:  $\{x|x \in R\}$ , R:  $\{y|y \leq 0\}$

5.

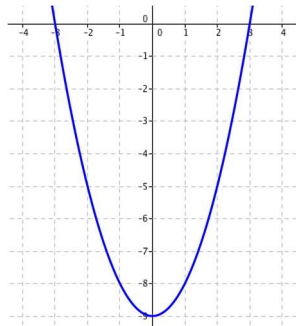


vertex:  $(5,-16)$ , AOS:  $x = 5$   
 x-int:  $(1,0)$  &  $(9,0)$   
 y-int:  $(0,9)$ , Min = -16  
 D:  $(-\infty, \infty)$ , R:  $[-16, \infty)$

6.

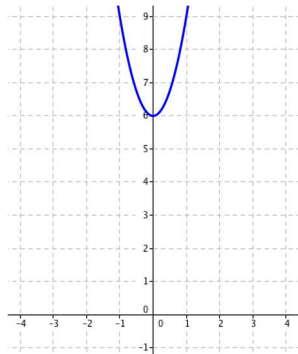
vertex:  $(-\frac{1}{3}, -\frac{13}{3})$ , AOS:  $x = -\frac{1}{3}$   
 y-int:  $(0,-5)$ , Max =  $-\frac{13}{3}$   
 D:  $\{x|x \in R\}$ , R:  $\{y|y \leq -\frac{13}{3}\}$

7.



vertex:  $(0,-9)$ , AOS:  $x = 0$   
 x-int:  $(-3,0)$  &  $(3,0)$   
 y-int:  $(0,-9)$ , Min =  $-9$   
 D:  $(-\infty, \infty)$ , R:  $[-9, \infty)$

8.



vertex:  $(0,6)$ , AOS:  $x = 0$   
 x-int: none y-int:  $(0,6)$ , Min = 6  
 D:  $\{x|x \in R\}$ , R:  $\{y|y \geq 6\}$

9.  $f(x) = x^2 - x - 6$

10.  $f(x) = 3x^2 - 12x + 17$

11.  $f(x) = -2x^2 - 16x - 39$

12.  $f(x) = 3x^2 - 12x - 36$

13.  $f(x) = 5x^2 + 60x + 179$

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