

See ANSWERS below on page 2.

For each quadratic equation, identify the x-intercept, y-intercept, axis of symmetry, vertex, and sketch a graph of the parabola.

1.  $f(x) = x^2 + 4x + 8$

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

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

4.  $f(x) = x^2 + 2x - 8$

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

graph in desmos  
to help you answer  
the questions

Write the equation of the parabola in standard form given the following conditions.

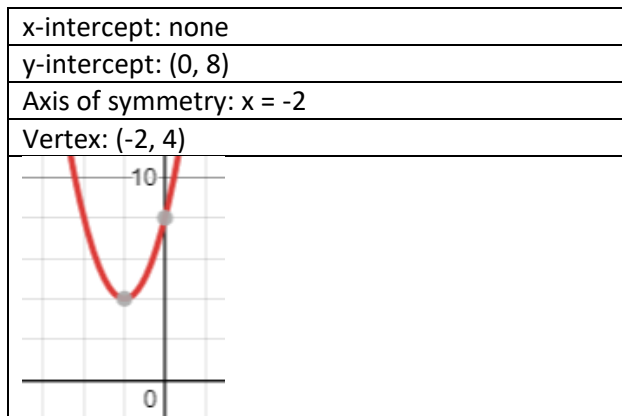
6. Passes through the points (1, 0) (5, 0) and (3, -4)

7. Passes through the points (-10, 0) (-8, 0) and (-9, -1)

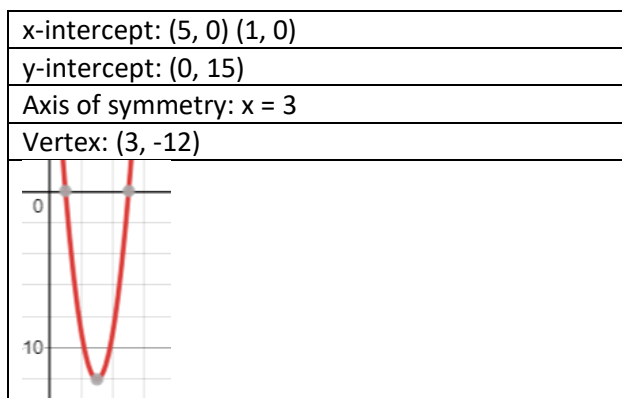
8. Passes through the points (1, 0) (-3, 0) and (2, 10)

Answers:

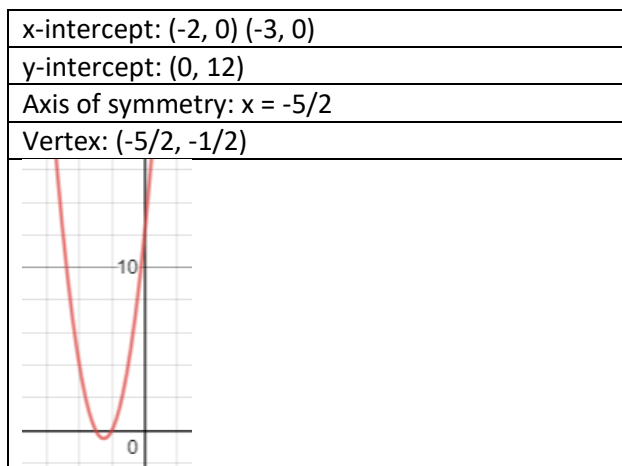
1.



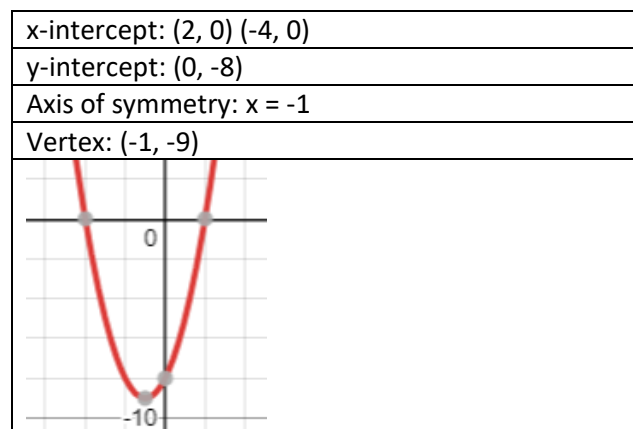
2.



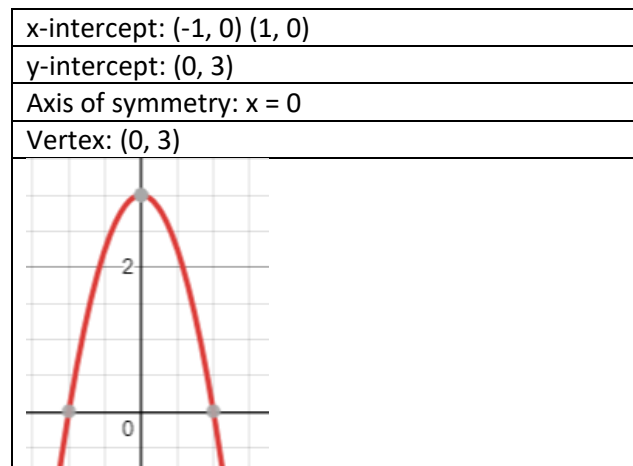
3.



4.



5.



6.  $y = x^2 - 6x + 5$

$x\text{-int: } (1, 0) (5, 0) \quad pt: (3, -4)$   
 $y = a(x-1)(x-5)$   
 $-4 = a(3-1)(3-5)$   
 $-4 = -4a$   
 $a = 1$

$y = (x-1)(x-5)$   
 $y = x^2 - 5x - x + 5$   
 $y = x^2 - 6x + 5$

7.  $y = x^2 + 18x + 80$

$x\text{-int: } (-10, 0) (-8, 0) \quad pt: (-9, -1)$   
 $y = a(x+10)(x+8)$   
 $-1 = a(-9+10)(-9+8)$   
 $-1 = -a$   
 $a = 1$

$y = (x+10)(x+8)$   
 $y = x^2 + 8x + 10x + 80$   
 $y = x^2 + 18x + 80$

8.  $y = 2x^2 + 4x - 6$

x-int  $(1,0)$   $(-3,0)$  pt:  $(2,10)$

$$y = a(x-1)(x+3)$$

$$10 = a(2-1)(2+3)$$

$$\frac{10}{5} = \frac{5a}{5}$$

$$a = 2$$

$$y = 2(x-1)(x+3)$$

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

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

$$y = 2x^2 + 4x - 6$$