

Starter 16 FEB 2017

Graph the following. What is the vertex? Does it have an axis of symmetry? If so, what is its equation?

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

$(0,0)$   
 $x=0$

x	y
-2	-16
-1	-4
0	0
1	-4
2	-16

Parabola Graphing Quadratic Equations

Graph each equation on the same graph.

1)  $y = x^2$  axis of symmetry  $x=0$  vertex  $(0,0)$   
 $y = 3x^2$  axis of symmetry  $x=0$  vertex  $(0,0)$   
 $y = -3x^2$  axis of symmetry  $x=0$  vertex  $(0,0)$

$y = (x+2)^2$

x	y
-2	0
-1	1
0	4
1	9
2	16

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

x	y
-2	-4
-1	-3
0	-2
1	-3
2	-4

$y = (x+2)^2 - 12$

x	y
-2	-12
-1	-11
0	-10
1	-11
2	-12

1)  $y = x^2$  axis of symmetry  $x=0$  vertex  $(0,0)$   
 2)  $y = x^2 + 4$  axis of symmetry  $x=0$  vertex  $(0,4)$   
 $y = x^2 - 4$  axis of symmetry  $x=0$  vertex  $(0,-4)$

$y = (x-1)^2 - 4$

x	y
-2	8
-1	5
0	4
1	5
2	8

$(2)^2 = (-2)^2 = 4$   
 $( ) (2)^2 - 4 = 4 - 4 = 0$

$y = x^2 + 2x + 3$  axis of symmetry  $x = -1$  vertex  $(-1, 2)$

3)  $y = x^2 - 2x + 3$  axis of symmetry \_\_\_\_\_ vertex \_\_\_\_\_  
 $y = x^2 + 4x + 9$  axis of symmetry \_\_\_\_\_ vertex \_\_\_\_\_

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

x	y
0	3
-2	3
-1	2

$x+2=0$   
 $x = -2$

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

$y = x^2 + 2x + 3$  axis of symmetry  $X = -1$  vertex  $(-1, 2)$   
 3)  $y = x^2 - 2x + 3$  axis of symmetry  $X = 1$  vertex  $(1, 2)$   
 $y = x^2 + 4x + 9$  axis of symmetry \_\_\_\_\_ vertex \_\_\_\_\_

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

x	y
0	3
2	3
1	2

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

$y = x^2 + 2x + 3$  axis of symmetry  $X = -1$  vertex  $(-1, 2)$   
 3)  $y = x^2 - 2x + 3$  axis of symmetry  $X = 1$  vertex  $(1, 2)$   
 $y = x^2 + 4x + 9$  axis of symmetry  $X = -2$  vertex  $(-2, 5)$

$y = x(x+4) + 9$   
 $-4 + 4 = 0$

x	y
0	9
-4	9
-2	5

$y = (-2)(-2+4) + 9$   
 $(-2)(2) + 9$   
 $-4 + 9 = 5$

$y = x^2 + 7x - 3$   
 $x(x+7)$   
 $-7+7$   
 $(0, -3)$   
 $(-7, -3)$

$y = x^2 + 8x + 2$   
 $x(x+8)$   
 $-8$   
 $(0, 2)$   
 $(-8, 2)$

fix this problem on your paper.

$y = x^2 - 6x + 3$  axis of symmetry \_\_\_\_\_ vertex \_\_\_\_\_  
 4)  $y = x^2 - 2x + 1$  axis of symmetry \_\_\_\_\_ vertex \_\_\_\_\_  
 $y = x^2 + 7x - 6$  axis of symmetry \_\_\_\_\_ vertex \_\_\_\_\_