

# Transformations of Parabolas Assignment

Graph each function. Describe its transformation from  $y = x^2$ .

1.  $y = x^2 + 2$

2.  $y = x^2 - 2$

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

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

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

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

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

Determine the vertex, maximum or minimum value, and axis of symmetry of each parabola.

1.  $y = 5(x-6)^2 + 7$

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

3.  $y = -2.5(x+7)^2 + 10$

Given two points on the parabola:  $y = a(x-h)^2$ , find the coefficients  $a$  &  $h$ .

1.  $(-1,1)$  and  $(1,1)$

2.  $(3,3)$  and  $(5,3)$

3.  $(-5,6)$  and  $(-3,6)$

Convert from standard form of a parabola to the vertex form:

1.  $y = -3x^2 - 4x + 8$

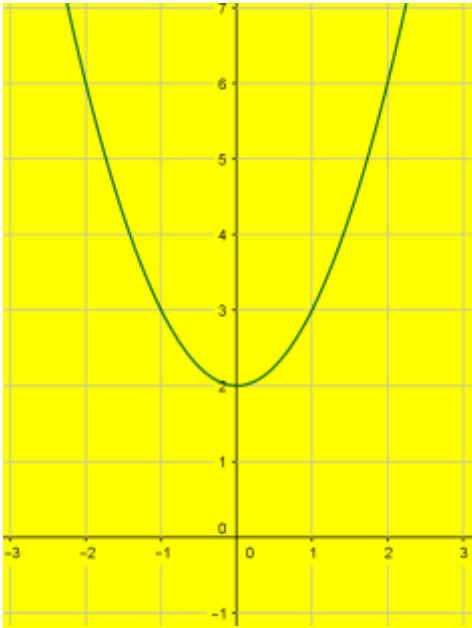
2.  $y = -6x^2 - 6x + 8$

## Transformations of Parabolas Assignment

Answers:

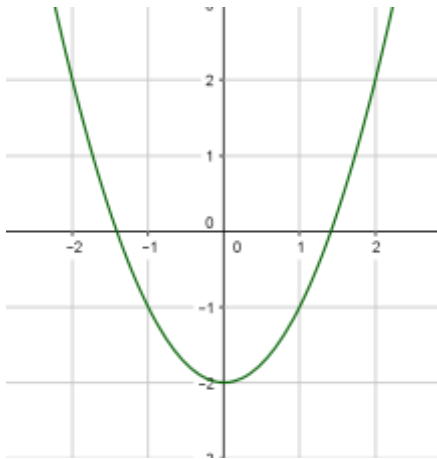
Graph each function. Describe its transformation from  $Y = x^2$ .

1.



$Y = x^2$  is translated 2 units up to be  $y = x^2 + 2$

2.



$Y = x^2$  is translated 2 units down to be  $y = x^2 - 2$

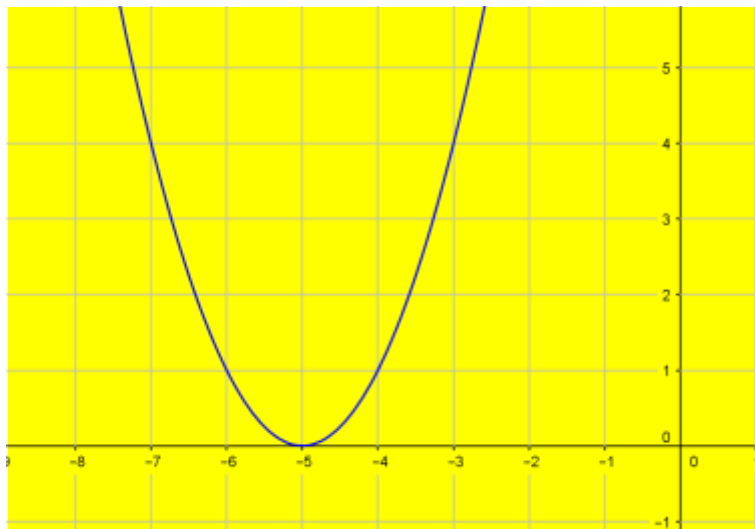
## Transformations of Parabolas Assignment

3.



$Y=x^2$  is translated 6 units to the right to be  $y=(x-6)^2$

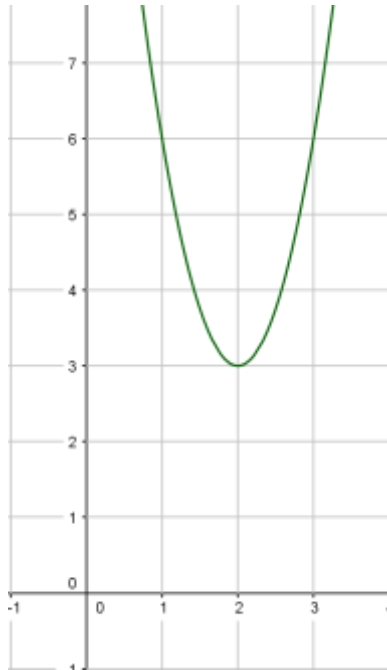
4.



$Y=x^2$  is translated 5 units to the left to be  $y=(x+5)^2$

# Transformations of Parabolas Assignment

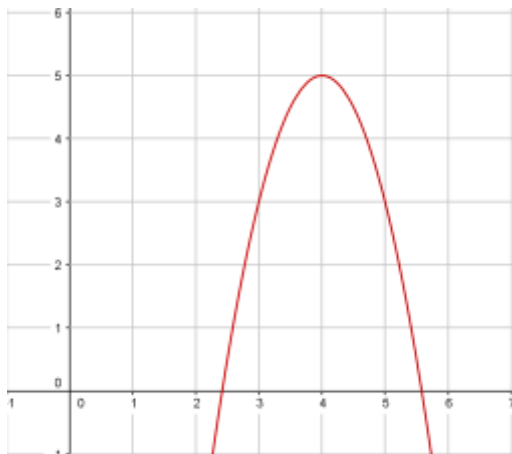
5.



$Y=x^2$  is translated 2 units to the right and 3 units up,

and stretched vertically by a factor of 3 to be  $y= 3(x-2)^2+3$

6.



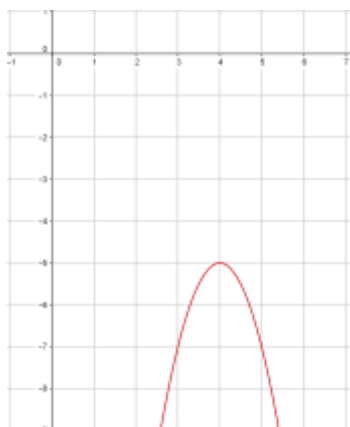
$Y=x^2$  does a reflection across the x-axis, then translated 4 units

to the right and 5 units up,

and stretched vertically by a factor of 2 to be  $y= -2(x-4)^2+5$

**Transformations of Parabolas** Assignment

7.



$Y=x^2$  does a reflection across the x-axis, then translated 4 units to the right and 5 units down, and stretched vertically by a factor of 2 to be  $y= -2(x-4)^2-5$

Determine the vertex, maximum or minimum value,  
and axis of symmetry of each parabola.

1. Vertex (6,7), Minimum value=7, Axis of symmetry  $x=6$

2. Vertex (3, 4), Maximum value=4, Axis of symmetry  $x=3$

3. Vertex (-7,10), Maximum value=10, Axis of symmetry  $x= -7$

Given two points on the parabola:

$y= a(x-h)^2$ , find the coefficients  $a$  &  $h$ .

1.  $h=0, a=1, y= x^2$

3.  $h= -4, a=6, y=$

2.  $h=4, a= 3, y=3(x-4)^2$

$6(x+4)^2$

Convert from standard form of a parabola to the vertex form:

1.  $y= -4(x+(-1))^2+10$

2.  $y = -6(x+0.5)^2+9$