

Algebra 2  
Chapter 2 Test Review #1

**PART I: TRANSFORMATIONS**

Describe each transformation from the parent graph,  $y = x^2$ .

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

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

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

6.  $y = -\frac{3}{4}(x + 2)^2$

3.  $y = -x^2 - 1$

7.  $y = x^2 - 2$

4.  $y = \frac{1}{4}(x + 4)^2 - 3$

8.  $y = \frac{1}{3}(x - 4)^2$

Write a function rule for each transformation from the parent graph,  $y = x^2$ .

9. left 4 and up 2

13. shrink by a factor of  $\frac{1}{2}$  and up 3

10. down 5 and right 6

14. stretch by a factor of 2, reflected over the x-axis

11. reflected over the x-axis and right 1

15. reflected over the x-axis, left 5 and up 4

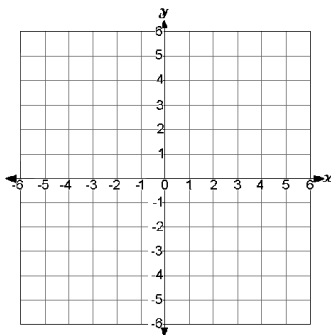
12. stretch by a factor of 5 and down 2

16. shrink by a factor of  $\frac{2}{3}$ , right 5 and down 1

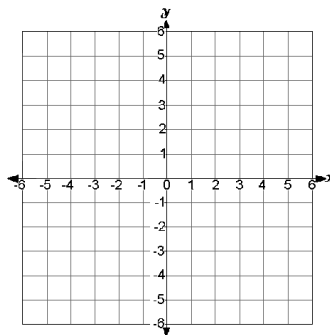
**PART II: GRAPHING PARABOLAS**

Graph each parabola. Determine the vertex, max/min, axis of symmetry, domain, and range.

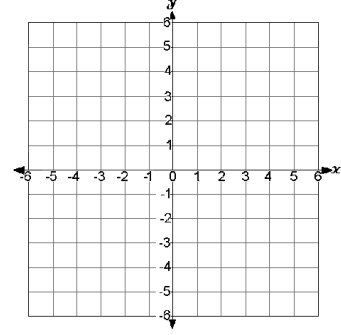
1.  $y = (x - 3)^2 + 1$



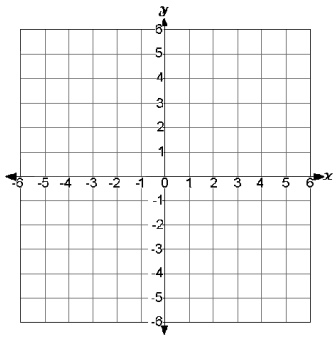
2.  $y = 3(x + 1)^2 - 1$



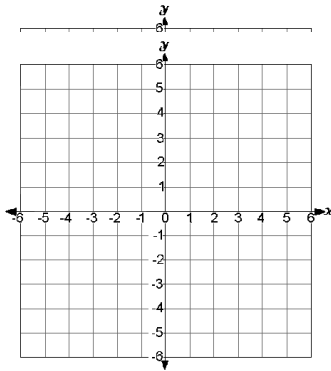
3.  $y = -(x + 2)^2$



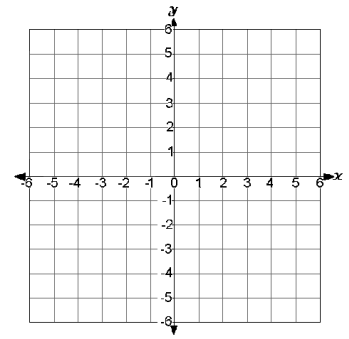
4.  $y = (x - 4)(x + 2)$



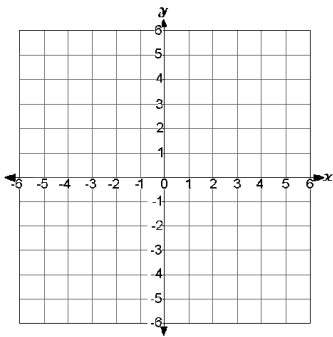
5.  $y = 2(x + 1)(x - 3)$



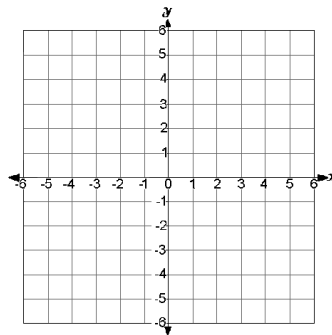
6.  $y = -3(x - 1)(x + 5)$



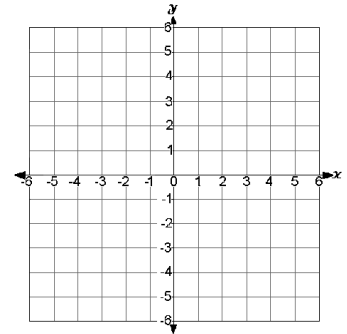
7.  $y = x^2 - 4x - 5$



8.  $y = 2x^2 + 12x + 23$

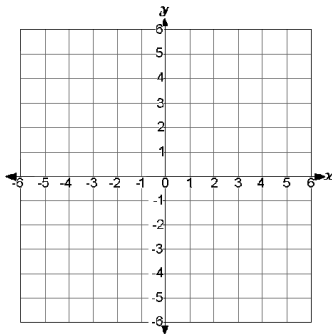


9.  $y = -x^2 - 4x + 32$

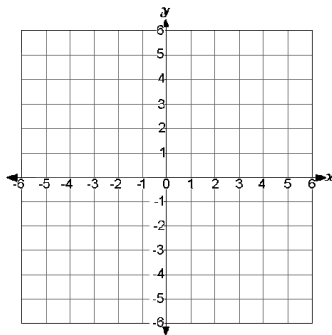


Graph each parabola. Determine the vertex, axis of symmetry, domain, and range.

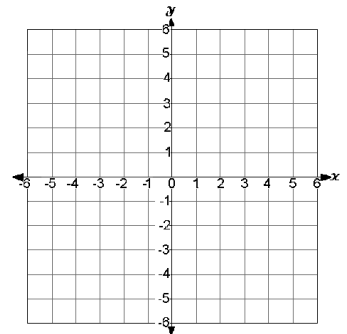
10.  $x = (y - 2)^2 + 3$



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



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



### PART III: WRITING QUADRATIC EQUATIONS

Write an equation for the quadratic function that has the given vertex and passes through the given point.

1. Vertex:  $(-2, 3)$  Point  $(-3, 5)$

4. Vertex:  $(0, 3)$  Point  $(3, 9)$

2. Vertex:  $(1, 4)$  Point  $(3, 6)$

5. Vertex:  $(-6, 0)$  Point  $(-8, 20)$

3. Vertex:  $(4, -5)$  Point  $(6, -21)$

6. Vertex:  $(-2, -5)$  Point  $(-4, 7)$

Write an equation for the quadratic function that has the given  $x$ -intercepts and passes through the given point.

7.  $x$ -intercepts at  $-4$  and  $5$ ; point  $(-6, 44)$

10.  $x$ -intercepts at  $-2$  and  $-4$ ; point  $(-1, 9)$

8.  $x$ -intercepts at  $3$  and  $-6$ ; point  $(-4, 14)$

11.  $x$ -intercepts at  $5$  and  $1$ ; point at  $(-1, 6)$

9.  $x$ -intercepts at  $1$  and  $4$ ; point  $(3, -4)$

12.  $x$ -intercepts at  $-3$  and  $-1$ ; point  $(-5, 24)$

Write an equation for the quadratic function passes through the given 3 points.

13.  $(-1, 10)$ ,  $(1, 4)$ ,  $(3, 14)$

15.  $(2, -7)$ ,  $(-2, 9)$ ,  $(6, -7)$

14.  $(-2, -24)$ ,  $(1, 0)$ ,  $(2, -4)$

16.  $(1, -7)$ ,  $(-3, -11)$ ,  $(3, -41)$