

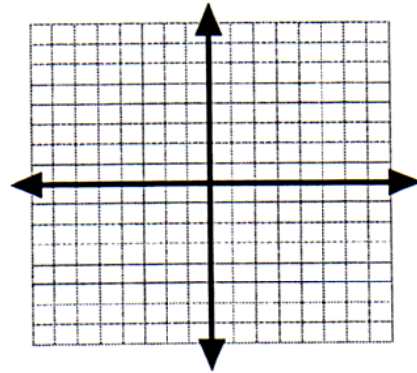
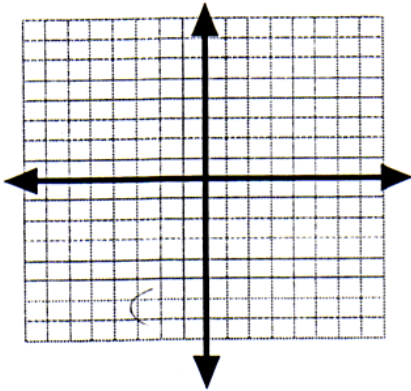
Math 11

Practice Test: The Parabola

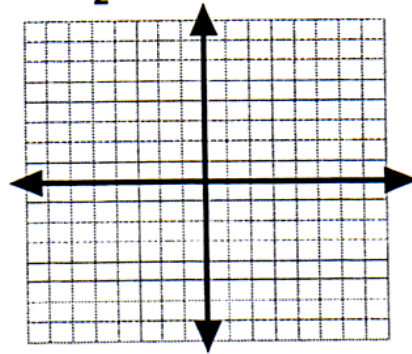
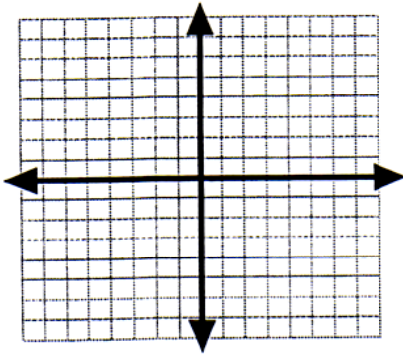
Name: _____

Graph the following, stating the vertex and showing at least 5 points (or as many points as the graph permits).

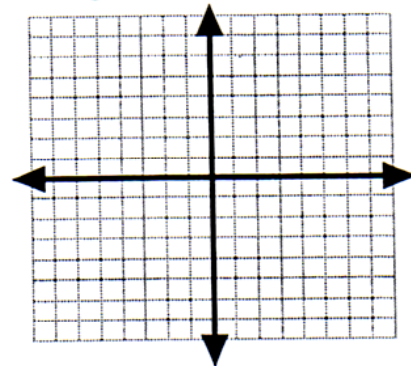
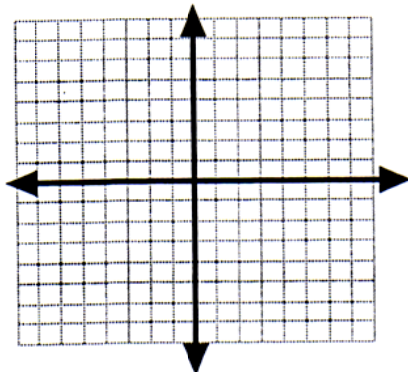
1. $y = (x-2)^2 - 6$ $V(\quad , \quad)$ 2. $y = x^2 + 1$ $V(\quad , \quad)$



3. $y = -2(x-5)^2$ $V(\quad , \quad)$ 4. $y = \frac{1}{2}(x-3)^2 + 1$ $V(\quad , \quad)$



5. $y = 4(x+1)^2 - 7$ $V(\quad , \quad)$ 6. $y = -\frac{1}{8}(x-2)^2 + 5$ $V(\quad , \quad)$



7. Find the vertex for the following parabolas:

a) $y = x^2 - 12x$

b) $y = -5x^2 + 10x + 8$

V: (,)

V: (,)

c) $y = \frac{1}{3}x^2 - 6x - 5$

d) $y = x^2 + 11x + 1$

V: (,)

V: (,)

8. Answer the following questions, for these parabolas:

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

b) $y = -x^2 - 2x + 5$

Axis of Symmetry: _____

Axis of Symmetry: _____

Domain: _____

Domain: _____

Range: _____

Range: _____

Vertex: Max Min

Vertex: Max Min

Y intercept: _____

Y intercept: _____

X intercept(s): _____

X intercept(s): _____

9. Find the equation of the parabola that:

a) has vertex $(-5,6)$, opens down, and is congruent to $y = \frac{3}{7}x^2$

a) _____

b) has vertex $(8,2)$, and point $(4,-12)$

b) _____

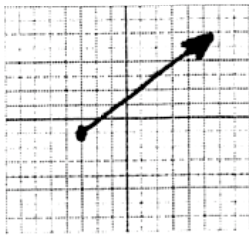
c) has vertex $(3,-2)$ and x intercepts 1 and 5

c) _____

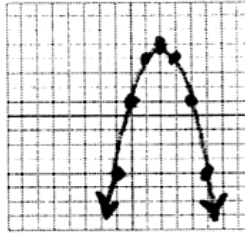
d) has axis of symmetry $x = 5$, range $y \geq -2$, point $(2,8)$

d) _____

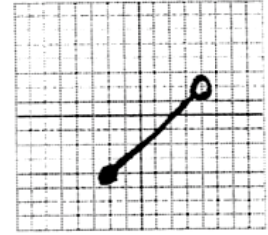
10. Determine the domain and the range of the following graphs:



Domain: _____
Range: _____



Domain: _____
Range: _____



Domain: _____
Range: _____

11. Factor the following:

a) $x^2 + 5x - 14$

b) $x^2 - 10x + 16$

c) $9x^2y^3z + 6xyz^4$

d) $3a(x - 1) + 2b(x - 1)$

e) $6x^2 - 5x - 4$

f) $10x^2 + 21x - 10$

12. Factor and then solve each of these quadratic equations:

a) $x^2 - 9 = 0$

b) $2x^2 - 12x + 18 = 0$

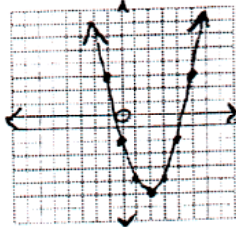
c) $x^2 + 9x = 0$

d) $8x^2 - 7x = 1$

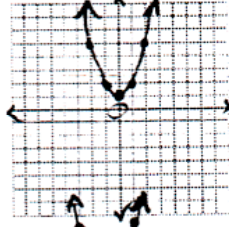
e) $-8x^2 - 18x + 5 = 0$

f) $x^2 = 20x - 100$

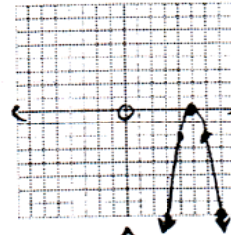
Solutions for Practice Test (Parabolas)



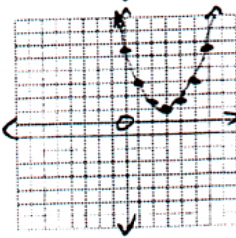
1. $V(2, -6)$



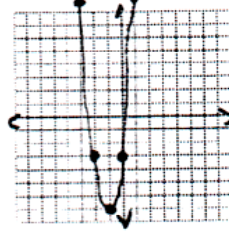
2. $V(0, 1)$



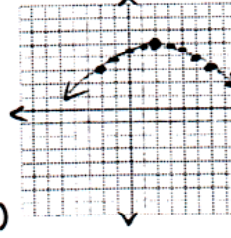
3. $V(5, 0)$



4. $V(3, 1)$



5. $V(-1, -7)$



6. $V(2, 5)$

7a) $V(6, -36)$

b) $V(1, 13)$

c) $V(9, -32)$

d) $V(-5.5, -29.25)$

8a) $x = -5$

$x \notin \mathbb{R}$

$y \geq -6$

MIN

19

$\pm\sqrt{6} - 5$

b) $x = -1$

$x \notin \mathbb{R}$

$y \leq 6$

MAX

5

$\pm\sqrt{6} - 1$

9a) $y = -\frac{3}{7}(x+5)^2 + 6$

b) $y = -\frac{7}{8}(x-8)^2 + 2$

c) $y = \frac{1}{2}(x-3)^2 - 2$

d) $y = \frac{10}{9}(x-5)^2 - 2$

10) Domain: a) $x \geq -3$

b) $x \in \mathbb{R}$

c) $-2 \leq x < 4$

Range: $y \geq -1$

$y \leq 5$

$-4 \leq y < 2$

11) a) $(x+7)(x-2)$

b) $(x-8)(x-2)$

c) $3xyz(3xy^2 + 2z^3)$

d) $(x-1)(3a+2b)$

e) $(3x-4)(2x+1)$

f) $(2x+5)(5x-2)$

12) a) $x = 3, -3$

b) $x = 3$

c) $x = 0, -9$

d) $x = \frac{1}{2}, -1/8$

e) $x = -5/2, \frac{1}{4}$

f) $x = 10$