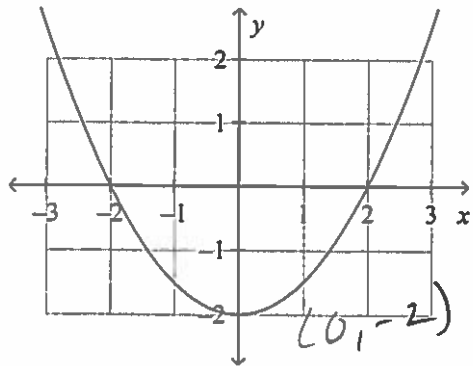


Chapter 10 Part 1 Practice Test (Sections 10.1-10.4)

Multiple Choice

Identify the choice that best completes the statement or answers the question.

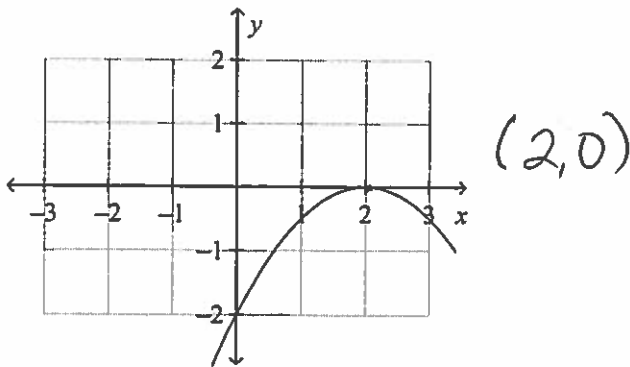
- B 1. Identify the vertex of the graph. Tell whether it is a minimum or maximum.



- a. (0, -2); maximum  
 b. (0, -2); minimum  
 c. (-2, 0); maximum  
 d. (-2, 0); minimum

- A 2. A parabola \_\_\_\_\_ has an axis of symmetry.  
 a. always  
 b. sometimes  
 c. never

- B 3. Identify the vertex of the graph. Tell whether it is a minimum or maximum.



- a. (2, 0); minimum  
 b. (2, 0); maximum  
 c. (0, 2); minimum  
 d. (0, 2); maximum

4. What is the equation for the axis of symmetry?

$$x = -\frac{b}{2a}$$

Name: \_\_\_\_\_

\* The smaller the number, the wider the graph

5. Order the group of quadratic functions from widest to narrowest graph.  $y = \frac{1}{3}x^2$

a.  $y = -7x^2, y = -\frac{1}{5}x^2, y = -\frac{1}{3}x^2$

b.  $y = \frac{2}{3}x^2, y = -2x^2, y = \frac{4}{3}x^2$

Widest:  $y = -\frac{1}{5}x^2$

Widest:  $y = \frac{2}{3}x^2$

Middle:  $y = -\frac{1}{3}x^2$

Middle:  $y = \frac{4}{3}x^2$

Narrowest:  $y = -7x^2$

Narrowest:  $y = -2x^2$

6. Find the equation of the axis of symmetry and the coordinates of the vertex of the graph of the function.

$y = -2x^2 + 4x - 5$

$a = -2$

$x = \frac{-4}{2(-2)} = \frac{-4}{-4} = 1$

AOS:  $x = 1$

$b = 4$

Vertex:  $(1, -3)$

$c = -5$

$y = -2(1)^2 + 4(1) - 5 = -2 + 4 - 5 = -3$

7. Solve the equation using square roots.  $x^2 + 5 = 41$

$-5 -5$

$\sqrt{x^2} = \sqrt{36}$

$x = \pm 6$

$x = +6$

$x = -6$

8. Solve the equation using square roots.  $-x^2 + 16 = 0$

$-16 -16$

$\sqrt{x^2} = \sqrt{16}$

$x = \pm 4$

$x = +4$

$x = -4$

9. Solve the equation using square roots.  $4x^2 = 36$

$\frac{4x^2}{4} = \frac{36}{4}$

$\sqrt{x^2} = \sqrt{9}$

$x = \pm 3$

$x = +3$

$x = -3$

10. Solve the equation using square roots.  $6x^2 = 32$

$\frac{6x^2}{6} = \frac{32}{6}$

$\sqrt{x^2} = \sqrt{5.3}$

$x = \pm 2.31$

$x = +2.31$

$x = -2.31$

11. Solve the equation.  $(x-1)(x-4) = 0$

$$\begin{array}{r} x-1=0 \\ +1 \\ \hline x=1 \end{array} \quad \begin{array}{r} x-4=0 \\ +4 \\ \hline x=4 \end{array}$$

$$x = \underline{1}$$

$$x = \underline{4}$$

12. Solve the equation.  $(2x+10)(8x-3) = 0$

$$\begin{array}{r} 2x+10=0 \\ -10 \\ \hline 2x=-10 \\ \frac{2x}{2} = \frac{-10}{2} \\ x = -5 \end{array} \quad \begin{array}{r} 8x-3=0 \\ +3 \\ \hline 8x=3 \\ \frac{8x}{8} = \frac{3}{8} \\ x = \frac{3}{8} \end{array}$$

$$x = \underline{-5}$$

$$x = \underline{\frac{3}{8}}$$

13. Solve the equation using factoring:  $z^2 - 7z - 18 = 0$

$$\begin{array}{r} (z-9)(z+2) = 0 \\ z-9=0 \\ +9 \\ \hline z=9 \end{array} \quad \begin{array}{r} z+2=0 \\ -z \\ \hline z=-2 \end{array}$$

$$x = \underline{9}$$

$$x = \underline{-2}$$

14. Solve the equation.  $x^2 + 10x + 24 = 0$

$$\begin{array}{r} (x+6)(x+4) = 0 \\ x+6=0 \\ -6 \\ \hline x=-6 \end{array} \quad \begin{array}{r} x+4=0 \\ -4 \\ \hline x=-4 \end{array}$$

$$x = \underline{-6}$$

$$x = \underline{-4}$$

15. Solve  $x^2 - 4x - 5 = 0$

$$\begin{array}{r} x^2 - 4x - 5 = 0 \\ (x-5)(x+1) = 0 \\ x-5=0 \\ +5 \\ \hline x=5 \end{array} \quad \begin{array}{r} x+1=0 \\ -x \\ \hline x=-1 \end{array}$$

$$x = \underline{5}$$

$$x = \underline{-1}$$

16. Describe at least 3 details (how it opens, width, axis, vertex, roots, etc.) about the function,  $f(x) = -5x^2 + 20x - 10$ .

- $a = -5$   
 $b = 20$   
 $c = -10$
- a.) opens up, wide, axis of symmetry of 2, vertex of (2, 10)
  - b.) opens down, skinny, axis of symmetry of 2, vertex of (2, 10)
  - c.) opens down, wide, axis of symmetry of 10, vertex of (10, 2)

$$x = \frac{-20}{2(-5)} = \frac{-20}{-10} = 2$$

AUS:  $x = 2$

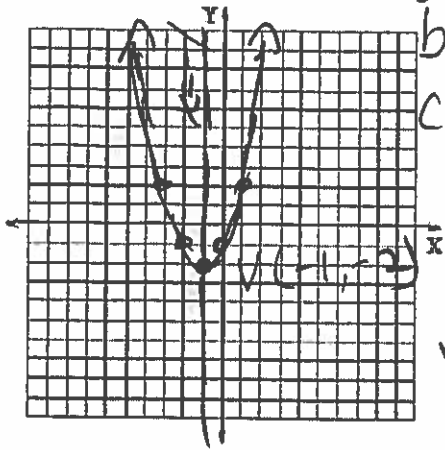
$$V\left(\underline{2}, \underline{10}\right)$$

$$y = -5(2)^2 + 20(2) - 10$$

$$= -20 + 40 - 10$$

$$\underline{y = 10}$$

17. Graph  $f(x) = x^2 + 2x - 1$ . First find the axis of symmetry and then set up a table.

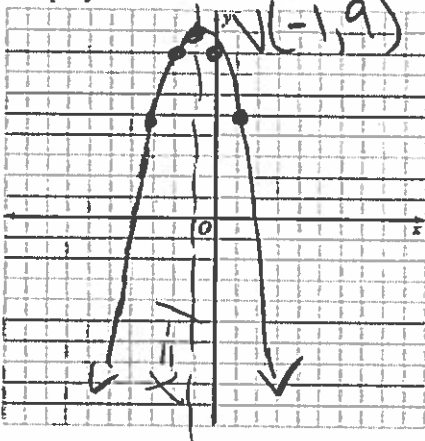


$a=1$  AOS:  $x = \frac{-2}{2(1)} = \frac{-2}{2} = -1$   
 $b=2$   
 $c=-1$

$x = -1$

$x$	$(x)^2 + 2(x) - 1$	$y$
-3	$(-3)^2 + 2(-3) - 1$	2
-2	$(-2)^2 + 2(-2) - 1$	-1
Vertex -1	$(-1)^2 + 2(-1) - 1$	-2
0	$(0)^2 + 2(0) - 1$	-1
1	$(1)^2 + 2(1) - 1$	2

18. Graph  $y = -x^2 - 2x + 8$ . Find the axis of symmetry and then set up a table.

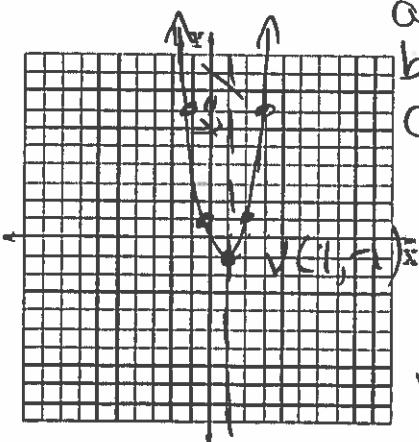


$a=-1$  AOS:  $x = \frac{-(-2)}{2(-1)} = \frac{2}{-2} = -1$   
 $b=-2$   
 $c=8$

$x = -1$

$x$	$-(x)^2 - 2(x) + 8$	$y$
-3	$-(-3)^2 - 2(-3) + 8$	5
-2	$-(-2)^2 - 2(-2) + 8$	8
Vertex -1	$-(-1)^2 - 2(-1) + 8$	9
0	$-(0)^2 - 2(0) + 8$	8
1	$-(1)^2 - 2(1) + 8$	5

19. Graph  $f(x) = 2x^2 - 4x + 1$ . First find the axis of symmetry and then set up a table.



$a=2$  AOS:  $x = \frac{-(-4)}{2(2)} = \frac{4}{4} = 1$   
 $b=-4$   
 $c=1$

$x = 1$

$x$	$2(x)^2 - 4(x) + 1$	$y$
-1	$2(-1)^2 - 4(-1) + 1$	6
0	$2(0)^2 - 4(0) + 1$	1
Vertex 1	$2(1)^2 - 4(1) + 1$	-1
2	$2(2)^2 - 4(2) + 1$	1
3	$2(3)^2 - 4(3) + 1$	7