

The following problems are just a sampling of possible exam problems. Be sure to review all notes, homework, and quizzes.

- 1) Solve using the square root property:

$$3x^2 = 25$$

- 2) Solve using the square root property:

$$(x - 3)^2 = 20$$

- 3) Solve the equation by completing the square.

$$x^2 + 14x + 40 = 0$$

- 4) Solve the equation by completing the square.

$$x^2 + 18x + 62 = 0$$

- 5) Given:
- $5x^2 + 8x = 9$

- Find the discriminant.
- Use the discriminant to determine the number and nature of the solutions.

- 6) Solve using the Quadratic Formula:

$$5x^2 - 4x = 1$$

- 7) Solve using the Quadratic Formula:

$$3x^2 + 10x + 5 = 0$$

- 8) Solve using the Quadratic Formula:

$$(x + 3)(x - 2) = 9$$

- 9) The area of a rectangular sign is 13 square inches. The length is 1 inch longer than the width. Find the
- length and width
- of the sign. (Express your answer in simplest radical form.)

- 10) A ball is thrown downward from a window in a tall building. The distance traveled by the ball in
- t
- seconds is
- $s = 16t^2 + 32t$
- , where
- s
- is in feet. How long (to the nearest tenth) will it take the ball to fall 163 feet?

- 11) A rock falls from a tower that is 176 ft high. As it is falling, its height is given by the formula
- $h = 176 - 16t^2$
- . How many seconds will it take for the rock to hit the ground?

- 12) Solve:

$$2(x + 3)^2 - 9(x + 3) - 5 = 0$$

- 13) Solve:

$$x^{2/3} - x^{1/3} - 2 = 0$$

- 14) Solve:

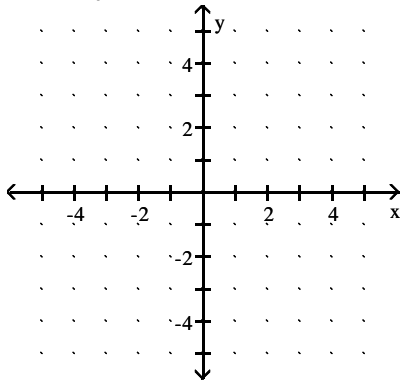
$$x^4 - 17x^2 + 72 = 0$$

- 15) Solve:

$$x - 1 = \sqrt{3x + 7}$$

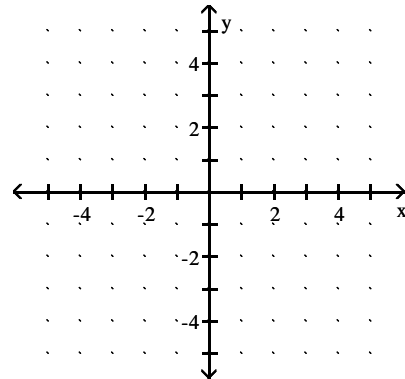
16) Given: $y = (x - 1)^2 - 3$

- What is the vertex?
- What is the axis of symmetry?
- Describe the transformations.
- Graph.



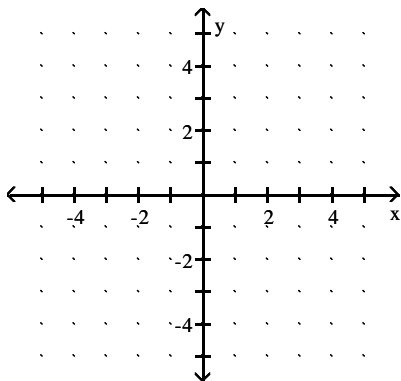
19) Graph: $y = x^2 - 3$

- Find the vertex.
- Find at least 4 points on the graph. List them in a table.



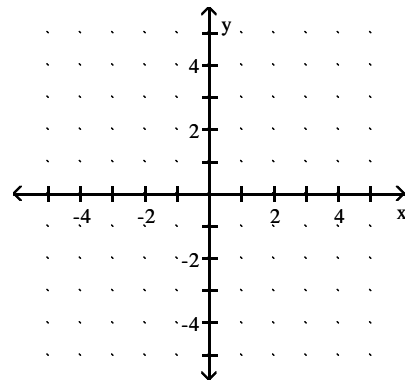
17) Graph: $y = (x - 5)^2$

- Find the vertex.
- Find at least 4 points on the graph. List them in a table.

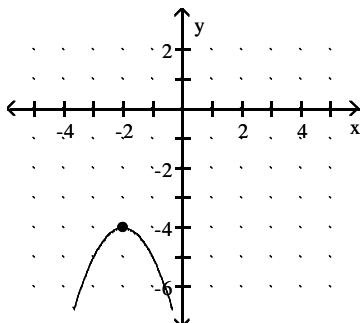


20) Graph: $y = -3x^2$

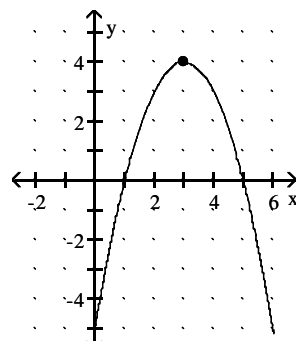
- Find the vertex.
- Find at least 4 points on the graph. List them in a table.



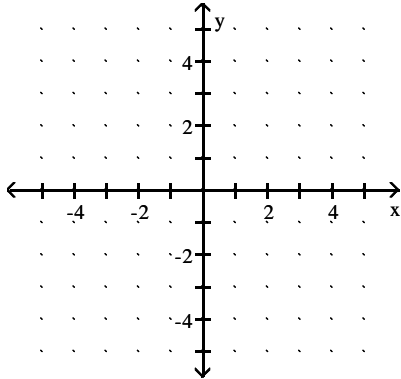
18) Write the equation of the parabola shown below using transformation concepts:



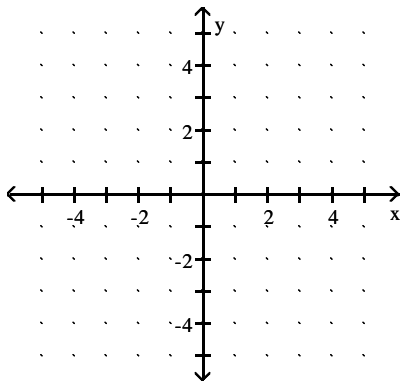
21) Write the equation of the parabola shown below using the transformation concepts:



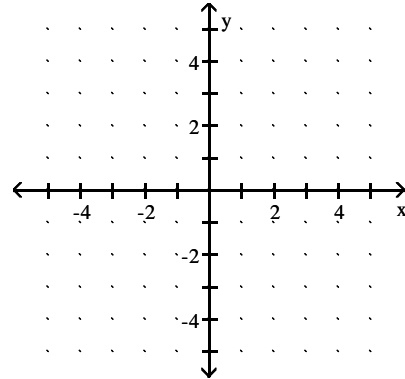
- 22) Given: $y = 2(x + 1)^2 - 3$
- What is the vertex?
 - Describe the transformations.
 - Graph. Be sure to find at least 4 points on the graph. List them in the table



- 23) Given: $f(x) = -x^2 - 2x + 3$
- Find the vertex.
 - Find the y-intercept.
 - Find the x-intercept(s), if any.
 - Graph. List one other point.



- 24) Given: $y = x^2 + 2x - 1$
- Find the vertex.
 - Find the y-intercept.
 - Find the x-intercept(s), if any.
 - Graph. List one other point.



- 25) A projectile is thrown upward so that its distance, in feet, above the ground after t seconds is $h = -15t^2 + 540t$.
- What is its maximum height?
 - After how many seconds does it reach its maximum height?

- 26) Bob owns a watch repair shop. He has found that the cost of operating his shop is given by $c = 2x^2 - 32x + 200$, where c is the cost in dollars, and x is the number of watches repaired.
- How many watches must he repair to minimize his cost?
 - What is his minimum cost?

Answer Key

Testname: M117 CHAP 11 REVIEW

1) $-\frac{5\sqrt{3}}{3}, \frac{5\sqrt{3}}{3}$

2) $3 \pm 2\sqrt{5}$

3) -4, -10

4) $-9 - \sqrt{19}, -9 + \sqrt{19}$

5) a. 244

b. 2 real solutions

6) $1, -\frac{1}{5}$

7) $\frac{-5 \pm \sqrt{10}}{3}$

8) $\frac{-1 - \sqrt{61}}{2}, \frac{-1 + \sqrt{61}}{2}$

9) $W = \frac{-1 + \sqrt{53}}{2}$

$L = \frac{1 + \sqrt{53}}{2}$

10) 2.3 sec

11) 3.3 sec

12) $-\frac{7}{2}, 2$

13) 8, -1

14) $\{\pm 3, \pm 2\sqrt{2}\}$

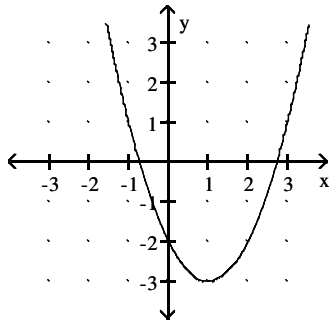
15) $\{6\}$

16) a. (1, -3)

b. $x = 1$

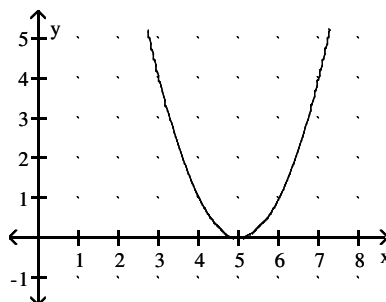
c. Shift left 1 unit, down 3 units, and open up.

d.



17) a. (5, 0)

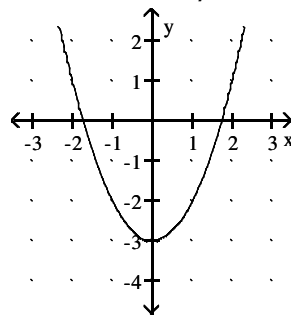
b. answers vary



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

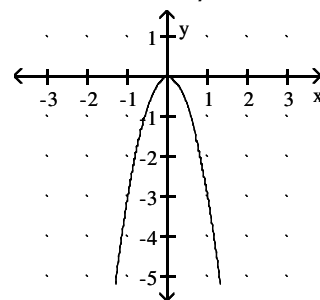
19) a. (0, -3)

b. answers vary



20) a. (0, 0)

b. answers vary

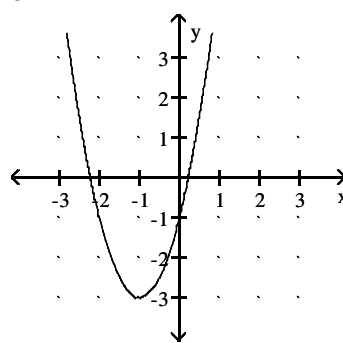


21) $y = -(x - 3)^2 + 4$

22) a. (-1, -3)

b. opens up, narrower shift left 1, shift down 1

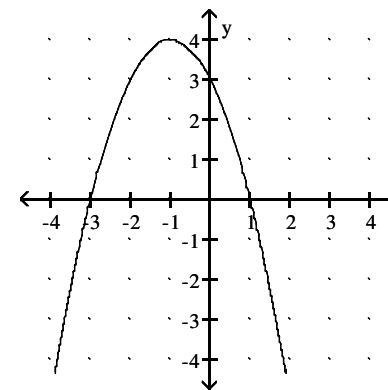
c.



23) a. (-1, 4) b. (0, 3)

c. (-3, 0) and (1, 0)

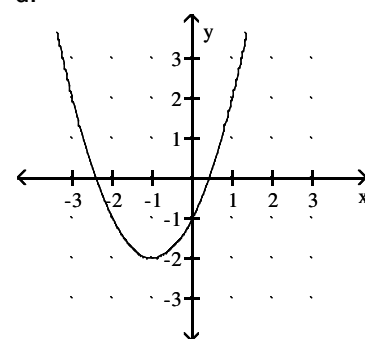
d.



24) a. (-1, -2) b. (0, -1)

c. $(-1 + \sqrt{2}, 0), (-1 - \sqrt{2}, 0)$

d.



25) a. 4860 ft b. 18 seconds

26) a. 27 watches b. \$72.00