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Instructor:

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## Chapter 8 Test Form A

Solve by completing the square.

1.  $x^2 + 2x - 3 = 0$  1. \_\_\_\_\_

2.  $3x^2 + 6x - 15 = 0$  2. \_\_\_\_\_

Solve using an appropriate technique.

3.  $(x - 3)^2 = 27$  3. \_\_\_\_\_

4.  $x^2 + 7x - 60 = 0$  4. \_\_\_\_\_

5.  $3x^2 - 8x - 16 = 0$  5. \_\_\_\_\_

6.  $x^2 - 14x + 50 = 0$  6. \_\_\_\_\_

7.  $10x^2 - 11x - 6 = 0$  7. \_\_\_\_\_

8.  $2y^2 - 6y = 1$  8. \_\_\_\_\_

9.  $x^3 - 8 = 0$  9. \_\_\_\_\_

10.  $x^4 - 10x^2 + 24 = 0$  10. \_\_\_\_\_

11.  $\frac{x}{x-1} = \frac{1}{x+1} + \frac{3}{x^2-1}$  11. \_\_\_\_\_

12.  $\frac{1}{3}x^2 = 2x + 1$  12. \_\_\_\_\_

13.  $(x-2)^2 + (x-2) - 12 = 0$  13. \_\_\_\_\_

Solve the inequality and write the solution in interval notation.

14.  $x^2 - 3x - 10 \leq 0$  14. \_\_\_\_\_

15.  $\frac{3}{x-5} < 0$  15. \_\_\_\_\_

16.  $\frac{x-3}{x+5} > 0$  16. \_\_\_\_\_

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17.  $\frac{x+1}{x+3} > 2$

17. \_\_\_\_\_

18. A square picture frame will hold a poster with an area of 196 square inches. Find the dimensions of the frame.

18. \_\_\_\_\_

19. A whole number increased by its square is 4 times itself. Find the number.

19. \_\_\_\_\_

20. A ball is thrown upward from a 100-foot tall building with an initial velocity of 14 feet per second. Its height  $s(t)$  is given by the function  $s(t) = -16t^2 + 14t + 100$ . Find the interval of time for which the ball is greater than 103 feet.

20. \_\_\_\_\_

21. Write the equation of a parabola with the shape as  $f(x) = -2x^2$  but with the vertex  $(-3, 2)$ .

21. \_\_\_\_\_

22. Find the vertex of the graph of  $f(x) = 3x^2 - 12x + 5$  and determine whether the graph opens upward or downward.

22. \_\_\_\_\_

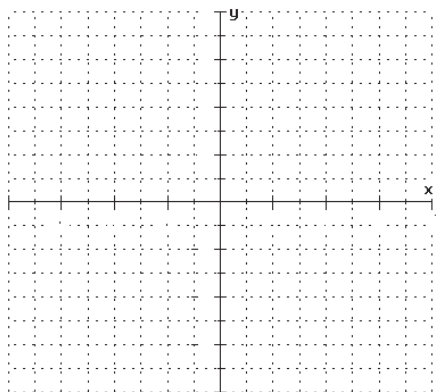
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Give the vertex, determine whether the graph opens upward or downward, and graph.

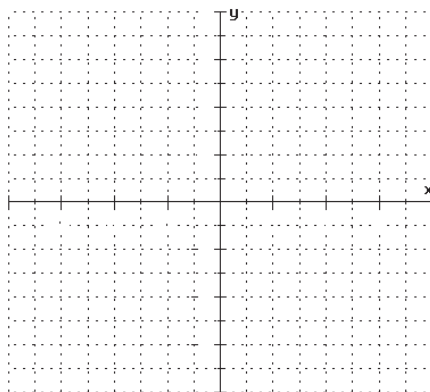
23.  $y = x^2 + 2x - 8$



23. Vertex: \_\_\_\_\_

Opens: \_\_\_\_\_

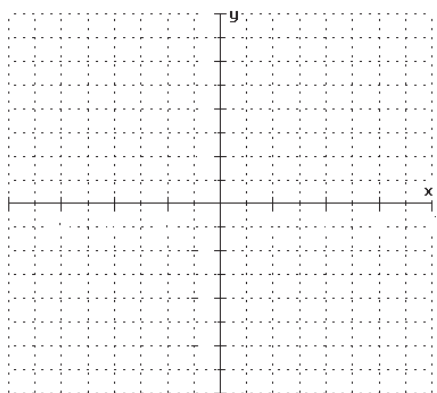
24.  $h(x) = 3(x+1)^2 - 3$



24. Vertex: \_\_\_\_\_

Opens: \_\_\_\_\_

25. Give the vertex and  $x$ -intercepts and graph.  $f(x) = -x^2 + 3x + 2$



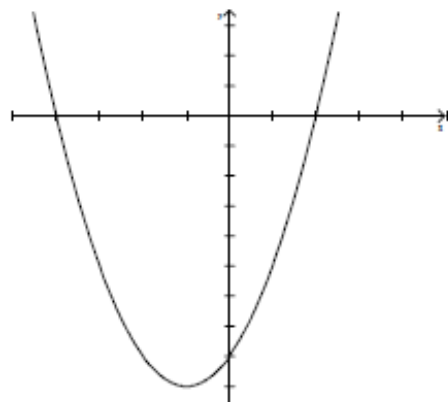
25. Vertex: \_\_\_\_\_

$x$ -intercepts: \_\_\_\_\_

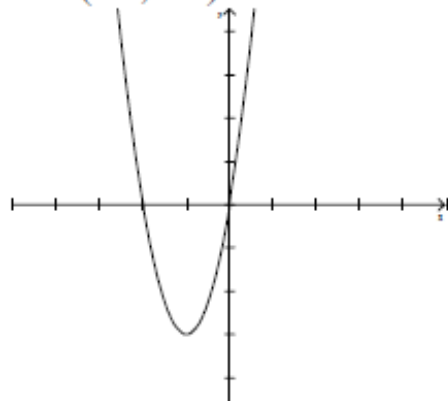
## Test 8 – A

1.  $1, -3$
2.  $-1 \pm \sqrt{6}$
3.  $3 \pm 3\sqrt{3}$
4.  $-12, 5$
5.  $-\frac{4}{3}, 4$
6.  $7 \pm i$
7.  $-\frac{2}{5}, \frac{3}{2}$
8.  $\frac{3 \pm \sqrt{11}}{2}$
9.  $2, -1 \pm i\sqrt{3}$
10.  $\pm 2, \pm \sqrt{6}$
11.  $\pm \sqrt{2}$
12.  $3 \pm 2\sqrt{3}$
13.  $-2, 5$
14.  $[-2, 5]$
15.  $(-\infty, 5)$
16.  $(-\infty, -5) \cup (3, \infty)$
17.  $(-5, -3)$
18. 14 in by 14 in
19. 3 or 0
20.  $\left(\frac{3}{8}, \frac{1}{2}\right)$
21.  $f(x) = -2x^2 - 12x - 16$
22.  $(2, -7)$ ; upward

23.  $(-1, -9); (2, 0), (-4, 0)$



24.  $(-1, -3)$



25.  $\left(\frac{3}{2}, \frac{17}{4}\right)$

