

Math 203
College Algebra
Practice Test 3

Name: _____ Date: _____

1. Factor to find the x-intercepts of the parabola described by the quadratic function

$$g(x) = x^2 - 49$$

2. The height in feet of a projectile with an initial velocity of 64 feet per second and an initial height of 70 feet is a function of time t , in seconds, given by

$$h(t) = -16t^2 + 64t + 70$$

Find the maximum height of the projectile.

3. Simplify $(-5 + i)(-6 - 81)$ and write the answer in standard form.

4. Find a possible expression for a quadratic function $f(x)$ having the zeros $x = -8$ and $x = 0$.

5. Simplify $5i - (1 - i)$ and write the answer in standard form.

6. Simplify $\frac{8+3i}{5+4i}$ and write the answer in standard form.

7. Graph the given function.

$$f(x) = (x + 2)^2 - 1$$

8. Solve the following equation using any convenient method.

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

9. Graph the pair of functions $f(x) = 3x^2$, $g(x) = x^2$ on the same set of coordinate axes.

10. Solve $0 = 4x^2 - 20x + 19$ using the quadratic formula.

11. Factor to find the real zeros of the parabola described by the quadratic function

$$G(t) = 5t^2 - t - 6 .$$

12. Find the intervals on which the quadratic function $f(x) = 0.6x^2 + 1.2x - 3.6$ is increasing and decreasing.

13. Graph the function $f(x) = x^2$ reflected about the x-axis and shifted 3 units up.

14. Use the method of completing the square to find the standard form of the quadratic function below. State the vertex and axis of symmetry of the graph of the function.

$$f(x) = x^2 + 4x + 8$$

15. Sketch a graph of the quadratic function $f(x) = 2x^2 - 8x + 9$.

16. Compute the zeros of the quadratic function $h(t) = 4t^2 - 2t + 9$.

17. Solve the quadratic equation $x^2 + 3x = 4$ by completing the square.

18. Write the number $\sqrt{-20}$ as a pure imaginary number.

19. The height in feet of a projectile with an initial velocity of 46 feet per second and an initial height of 45 feet is a function of time t , in seconds, given by $h(t) = -16t^2 + 46t + 45$. Find the time when the projectile has a height of 0 feet. Round to nearest tenth of a second.

20. Determine the number of real solutions of $25x^2 + 10x + 41 = 0$ by using the discriminant.

21. Evaluate f at the indicated value for $f(x) = \lceil x \rceil$.

$$f(-2.9)$$

$$f(4)$$

$$f\left(\frac{1}{3}\right)$$

22. Solve the equation: $|x - 2| + 3 = 8$

23. Solve the following inequality. Express your answer in interval notation, and graph the solution set on a number line.

$$|2 - 3x| \leq 10$$

24. Solve the following inequality. Express your answer in interval notation, and graph the solution set on a number line.

$$\left| \frac{x + 5}{2} \right| > 3$$

25. Graph the function by hand:

$$f(x) = \begin{array}{ll} \sqrt{x}, & 0 \leq x \leq 4 \\ -x + 1, & 4 < x < 6 \\ -1, & x \geq 6 \end{array}$$