Name_____ Period_____ Date_____

NON-CALCULATOR SECTION

Vocabulary: Define each word and give an example.

1. Quadratic Formula

2. Perfect Square Trinomial

Short Answer:

3. What is the discriminant and what does it tell us?

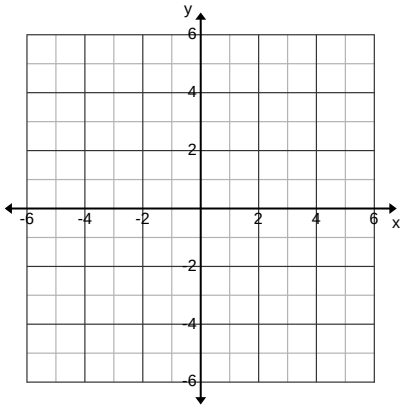
4. List three algebraic methods for solving quadratic equations.

Review:

5. Factor the polynomial: $4x^2 + 20x + 25$

6. Simplify the expression: $4^{\frac{3}{2}}$

7. Graph the function: $f(x) = \frac{1}{2}(x-1)^2 - 3$



Problems:

Be sure to **show all work used to obtain your answer. Circle or box in the final answer.**

Find the value of *n* below to make perfect square trinomials:

8. $x^2 + 18x + n$

9. $x^2 - 12x + n$

10. Solve the quadratic equations by **completing the square**. Show all work.

a. $y^2 - 4y - 5 = 0$ b. $x^2 + 8x = 24$ c. $2n^2 + 12n + 14 = 0$

11. Solve the quadratic equations by **quadratic formula**. Show all work.

a. $3x^2 + 5 = 10x$ b. $x^2 = 4x + 8$ c. $2x^2 + 6x = 7$

12. Find the number of real solutions for the equation. Make sure to report the discriminant.

a. $x^2 + 5x + 7 = 0$ b. $2x^2 - x = 8$ c. $4x^2 = 9$

13. Which method would you choose to solve the equation? Justify your reasoning.

a. $x^2 + 6x - 2 = 0$ b. $3x^2 - 27 = 0$

14. Find three consecutive positive even integers such that the product of the second and third integers is 20 more than ten times the first integer.

Multiple Choice Section: **Circle the best answer.**

15. What are the roots (solutions) of the equation $x^2 - 6x = -3$?

A. $\{3-\sqrt{6}, 3+\sqrt{6}\}$

B. $\{-3-\sqrt{6}, -3+\sqrt{6}\}$

C. $\{3-2\sqrt{6}, 3+2\sqrt{6}\}$

D. $\{-3-2\sqrt{6}, -3+2\sqrt{6}\}$

16. Find the number of real number solutions for the equation. $7w^2 + 6 = 13$

A. 0

B. 1

C. 2

17. Solve the equation. $4x^2 - 3x + 3 = 0$

A. $\frac{3 \pm \sqrt{39}}{4}$

B. $\frac{-3 \pm \sqrt{39}}{4}$

C. no real solution

D. $\frac{3 \pm \sqrt{39}}{8}$

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CALCULATOR SECTION

1. Mario's living room has a length 6 feet wider than the width. The area of the living room is 280 square feet. What are the dimensions of his living room?

2. Lauren throws a ball with an initial velocity of 40 feet per second. The equation for the height of the ball is $h = -16t^2 + 40t + 5$, where *h* represents the height in feet and *t* represents the time in seconds.

   a. When will the ball hit the ground?

   b. What is the height of the ball at 1 second?

   c. Find the maximum height attained by the ball.

   d. When did the ball reach its highest point?

3. Solve the equation $2x^2 + 12x - 4 = 0$ using the method of your choice. Round your answer(s) to the nearest hundredth.