

Unit 1 Review
Linear, Quadratic, and Piecewise Functions

NAME _____

Solve Linear Equations

Solve each equation.

1. $5x + 4 = 3x - 10$

2. $2x + 8 = 2(x - 5)$

3. $8(6x - 4) + 9x = 100$

Simplifying Radicals

Simplify each radical. (This DOES NOT mean write it as a decimal!)

4. $\sqrt{48}$

5. $\sqrt{-540}$

6. $\sqrt{-27}$

Discriminant

Determine the discriminant. Then state the type of solutions.

7. $x^2 - 10x + 25 = 0$

8. $8z^2 + 6z + 7 = 4$

9. $9m^2 = m + 2$

Solve Quadratic Equations

Solve each equation using the quadratic formula.

10. $k^2 - 7k + 12 = 0$

11. $4g^2 + 3 = 6g$

12. $5x^2 + 3x - 1 = 0$

13. $x^2 + 2x + 2 = 0$

14. $b^2 - 10b = 20$

15. $10x^2 - 9 = 9x$

16. $2h^2 - 7h = -7$

Vertex Formula

Determine the vertex of each quadratic function. State whether it is a maximum or a minimum.

17. $y = x^2 - 6x + 4$

18. $y = 2x^2 - 8x + 3$

19. $y = -3x^2 + 24x - 2$

Piecewise Functions

Evaluate each using the piecewise functions given below. Pay attention to if you need to use $f(x)$ or $g(x)$!!

$$f(x) = \begin{cases} 3x + 1, & x < 5 \\ x^2 - 2, & x \geq 5 \end{cases}$$

$$g(x) = \begin{cases} 6x, & x \leq -10 \\ x + 6, & x > -10 \end{cases}$$

20. $g(-4) =$

21. $f(5) =$

22. $g(-12) =$

23. $f(0) =$

24. $f(6) =$

25. $g(-10) =$