

PreCalc
Unit 1 (Part 1) Review 2

Name: _____

Date: _____

Directions: Follow the directions for each section. Show any work on a separate sheet of paper.

I. Write the equation of the line, given the following information.

1. Through (4,1) and (-2,1)

2. Perpendicular to $3x - 6y = 12$
through (-1,5)

3. Parallel to $-x - 3y = 8$
through (6,7)

II. Find all roots (real and imaginary) of the given polynomial equations.

4. $x^3 + 5x^2 - 5x - 25 = 0$

5. $4 - 36x^2 = 0$

6. $x^4 - 30x^2 + 200 = 0$

7. $x^3 - 9x = 0$

8. $12x^2 + 7x = -1$

9. $-x^2 = -20 + x$

III. Simplify each expression.

10. $m^2 \cdot m^{-8}$

11. $\frac{4(-h)^5}{8h^3}$

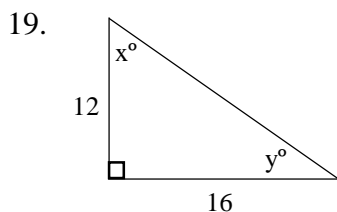
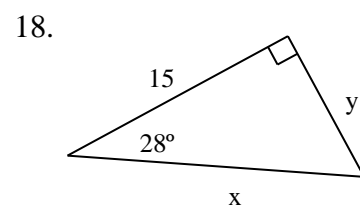
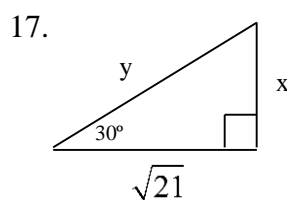
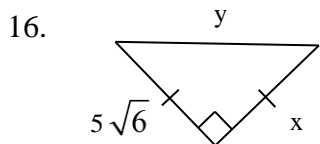
12. $-2\sqrt{8} \cdot 5\sqrt{2}$

13. $\frac{14\sqrt{8}}{7\sqrt{24}}$

14. $\frac{3}{4+i}$

15. $(-2-6i)(5+3i)$

IV. Solve for all missing lengths or angle measures.



V. State the domain of each function. Use interval notation for your answers.

20. $f(x) = \frac{3x}{\sqrt{3x-12}}$

21. $f(x) = \frac{1}{\frac{1}{2}x^2 - 18}$

22. $f(x) = \sqrt{x^2 + 4x - 12}$

$$23. f(x) = \sqrt{x^2 + 16}$$

$$24. f(x) = \frac{12x + 24}{7}$$

$$25. f(x) = \frac{\sqrt{2-x}}{x+1}$$

VI. Evaluate each new function given $f(x) = x^2 - 9$ and $g(x) = x + 1$.

$$26. (f + g)(x)$$

$$27. (g - f)(x)$$

$$28. (f \cdot f)(x)$$

$$29. (g/f)(x)$$

$$30. (g \cdot f)(2)$$

$$31. (f - g)(-3)$$

$$32. (g - f)(1) + g(-4)$$

$$33. (f \circ g)(x)$$

$$34. (g \circ g)(x)$$

VII. Determine whether f and g are inverses by proving $f(g(x)) = g(f(x)) = x$.

$$35. f(x) = 4x - 5, \quad g(x) = \frac{1}{4}x + 5$$

$$36. f(x) = 5 - x^2, \quad g(x) = \sqrt{-x + 5}$$

VIII. Given $f(x)$, find $f^{-1}(x)$. (find the inverse of each function below)

$$37. f(x) = \frac{2}{3}x + 1$$

$$38. f(x) = \sqrt[3]{2x - 7}$$

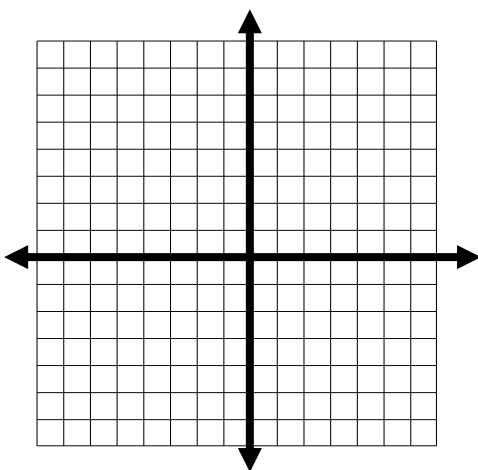
$$39. f(x) = \frac{x + 2}{5x - 3}$$

IX. Graph each piecewise function. State the Range of each function below the graph.

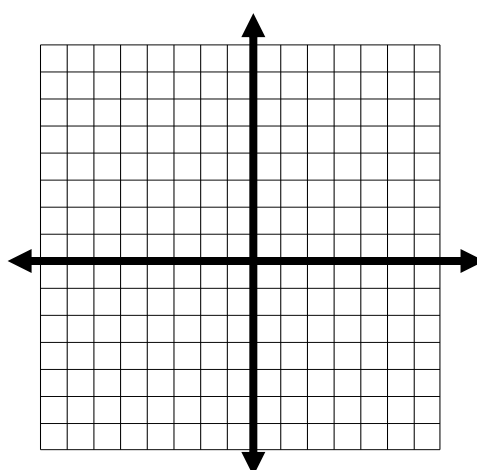
$$40. f(x) = \begin{cases} 2x - 1 & x < -1 \\ -x + 2 & x \geq -1 \end{cases}$$

$$41. f(x) = \begin{cases} -x^2 & x \leq 1 \\ \frac{3}{2}x + 1 & x > 1 \end{cases}$$

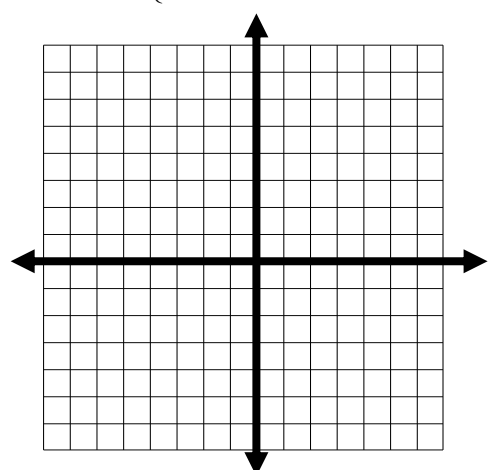
$$42. f(x) = \begin{cases} (x + 3)^2 - 1 & x \leq -2 \\ 2 & -2 < x < 0 \\ -3x + 2 & x \geq 0 \end{cases}$$



Range: _____



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Range: _____