

Name _____

Date _____

Pre-Calculus
Practice Midterm

On the real midterm, you will choose 25 of the 28 problems.

Solve each equation or inequality for all possible solutions. Then check your solution(s).

1. $-3x - 2 = 12 - (x + 6)$

2. $2n + 3 \leq 3(n + 2) - 6(n - 9)$

3. $y^2 - 78 = 7y$

4. $6k^2 + 7k - 20 = 0$

5. $\sqrt[3]{8u - 3} + 4 = -7$

6. $\frac{5}{4x - 5} + \frac{2}{x} = \frac{-3x}{4x - 5}$

7. $0 = x^2 + 4x + 8$

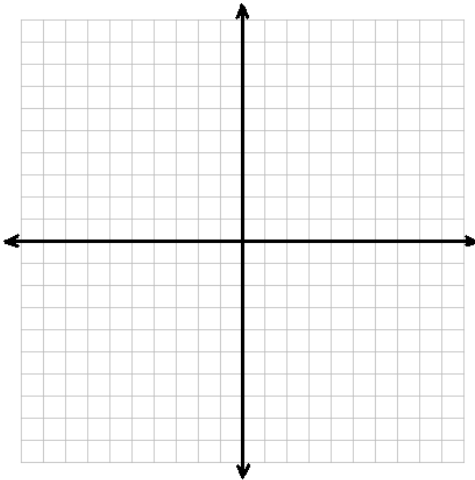
8. $\log_x 256 = 4$

9. $2200 = 5e^{0.017t}$

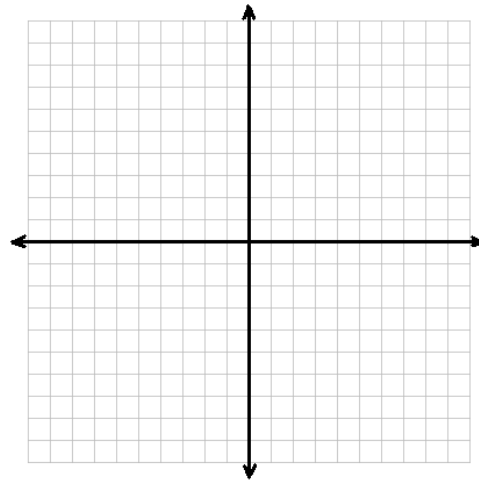
10. $2^{6x} = 104$

Graph each function below on the coordinate plane. It might help to graph the parent function first. *(Be sure to get tables and graph points!)*

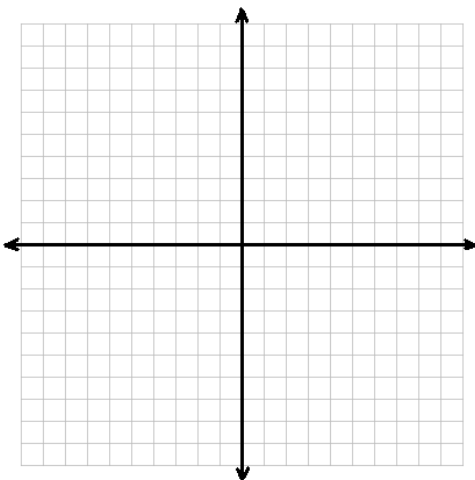
11. $4x - 3y = 15$



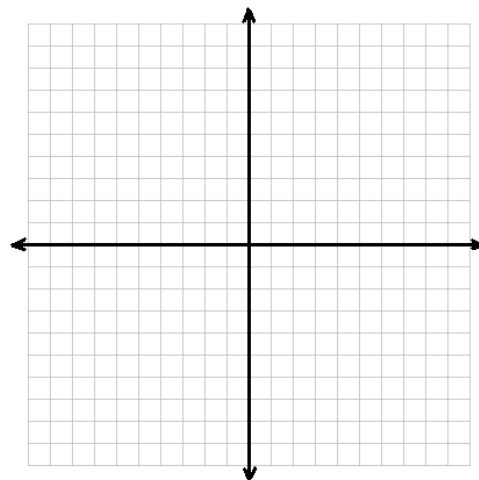
12. $y = x^2 - 3x + 4$



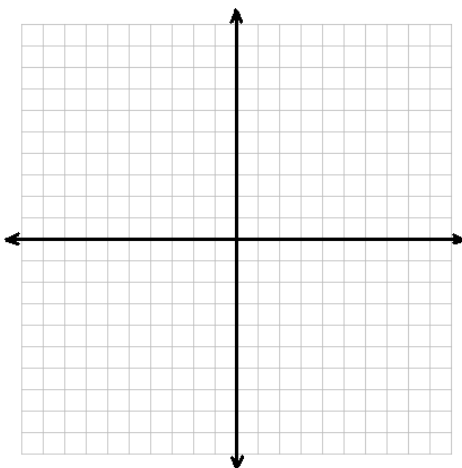
13. $y = |x| - 4$



14. $f(x) = \frac{1}{x-3} + 5$



15. $f(x) = x^4 - 29x^2 + 100$



16. Solve the system of equations below using any method:

$$2x - 3y = -18$$

$$x + \frac{2}{3}y = -\frac{1}{3}$$

17. Simplify the expression: $5t(4t - 9) - 3(7t^2 + 6t - 5)$

18. Give the independent variable and dependent variable in the following situation: *A chemist measures the weight of precipitate formed from different concentrations of reactants.*

Independent variable: _____ *Dependent variable:* _____

19. Give the domain and range for the following function: $l(f) = \sqrt{16 - 2f}$

20. Given $f(x) = |x^2 - 6|$, find the value of $f(n - 2)$.

21. Determine whether the following relation is a function: $y^2 + 5x = 3$

22. Classify the following function as even, odd, or neither: $y = 3x^2 + 2x - 5$

23. Find $[f \circ g](x)$ and $[g \circ f](x)$ for the given functions below:

$$f(x) = 3x^3 - 4x^2 + 2$$

$$g(x) = 4x$$

24. Find the inverse of the following function: $f(x) = x^2 - 5$

25. Divide using long division: $(3x^4 + 2x^3 - x^2 + 6) \div (x - 3)$

26. Find the real zeros of the following function, then factor the function completely:

$$f(x) = 4x^3 - 25x^2 + 19x + 30$$

27. Write the polynomial equation of least degree for the following set of roots: 4, 4, 6, -1

28. Evaluate the following expression: $\left(\frac{7}{8^6}\right)^6$