Honors Pre-Calculus Summer work Name_____

Due: Friday,August 28, 2026

Answer each and show the work. Work should be easy to read and answers should be easy to locate.

No Calculator.

Linear Equations

Write the following equations.

1. The line containing the point (4, -7) and having slope of $\frac{5}{2}$ in point slope form $y - y_1 = m(x - x_1)$.

2. The line containing the point (-13, 5) and parallel to $4x + 2y = -7$ in point slope form $y - y_1 = m(x - x_1)$.

3. The line containing the point (0, -2) and perpendicular to $x - 4y = 3$ in slope intercept form.

4. The line containing the point (2, 9) and having slope of 0 in slope intercept form.

5. Find the slope of the perpendicular bisector of the segment between (-5, 3) and (12, 3).

Composition of Functions.

Given $f(x) = 4x - 1$ and $g(x) = x + 6$, find the following compositions and simplify.

6. $g(f(x))$

7. $f(g(x))$

8. $f(f(x))$

9. $g(f(g(x)))$

Basic Factoring.

Factor each of the following as completely as possible.

10. $9x^3y - 25xy^3$

11. $x^3 + 7x^2 - 18x$

12. $8y^3 + 24y^2 - 7y - 21$

Function Analysis.

Determine the domain and zeros of each of the following functions.

13. $p(x) = (x + 5)(x - 8)$

14. $c(x) = \dfrac{-6}{2x-3}$

15. $f(x) = \dfrac{x+1}{x+2}$

16. $p(x) = \dfrac{6x^2-7x-3}{2}$

17. $q(x) = \dfrac{x-5}{(x+2)(x-5)}$

18. $t(x) = \dfrac{(x-3)(x+2)^2}{(x-10)^3}$

Mixed Review Problems

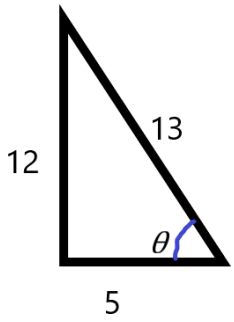
19. Find all roots of $p(x) = 3x^3 + x^2 + 12x + 4$

20. Determine the inverse (f^{-1}) for $f(x) = \sqrt[3]{x-3}$

21. Solve $\sqrt{x+1} = x - 1$

22. Simplify $\dfrac{y - \dfrac{1}{y}}{y + \dfrac{1}{y}}$

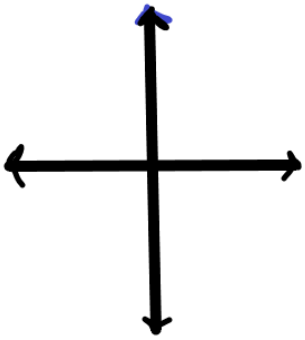
23. Find sin θ, cos θ and tan θ for the triangle.



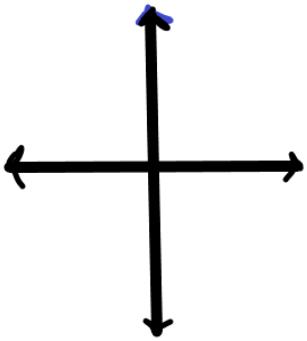
Graphs

Graph each function and clearly indicate the units on the axes provided.

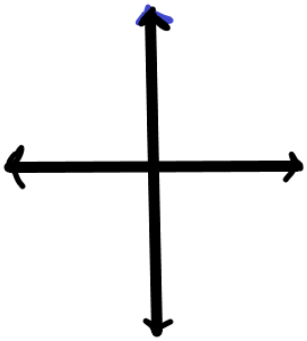
24. $f(x) = x$



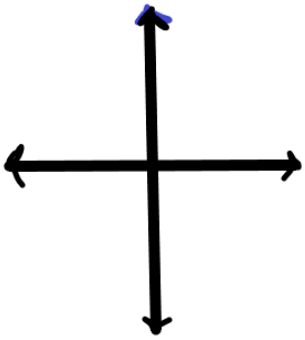
25. $f(x) = x^2$



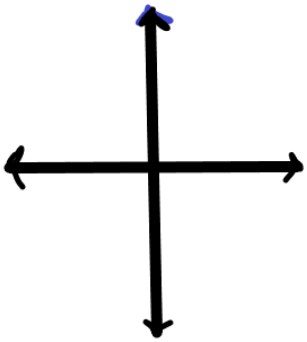
26. $f(x) = x^3$



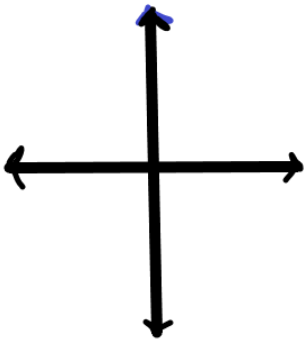
27. $f(x) = |x|$



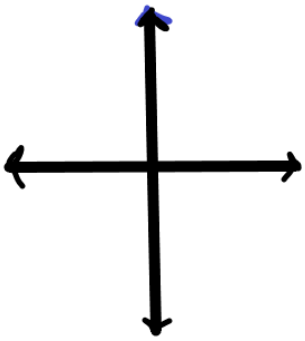
28. $f(x) = \frac{1}{x}$



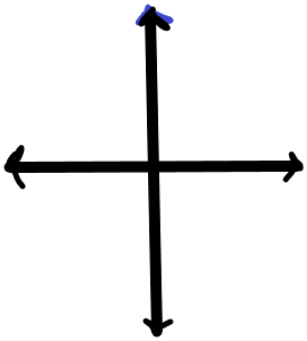
29. $f(x) = \frac{1}{x^2}$



30. $f(x) = \sqrt{x}$



31. $f(x) = \sqrt[3]{x}$



32. $x = -3$