Honors Pre-Calculus 331 Summer Work 2022

Due: August 26, 2022

Complete the following problems over the summer and have them ready by August 26th. Answer each and show the work. Work should be easy to read and answers should be easy to locate.

No Calculator.

Honors Pre-Calculus 331 Summer work Name_____

Linear Equations

Write the following equation in point slope form $(y - y_1) = m (x - x_1)$

1. The line containing the point (4, -7) and having slope of $\frac{5}{2}$.

2. The line containing the point (-13, 5) and parallel to $4x + 2y = -7$.

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

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

5. 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.

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) = $\frac{-6}{2x-3}$

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

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

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

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

Mixed Review Problems

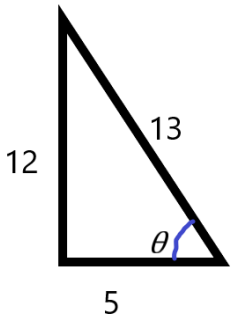
19. Find all roots of $p(x) = 3x^3 + x^2 + 12x + 4$

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

21. Solve $\sqrt{4y-9} - \sqrt{5y-4} = 1$

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

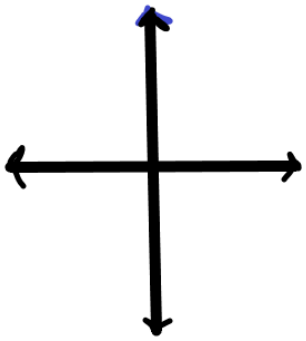
23. Find sin θ , cos θ and tan θ for the triangle.



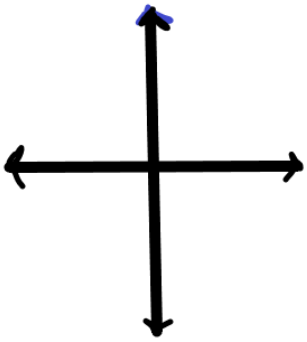
Graphs

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

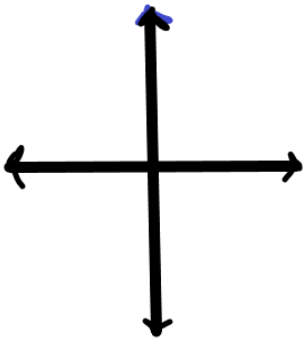
24. f(x) = x



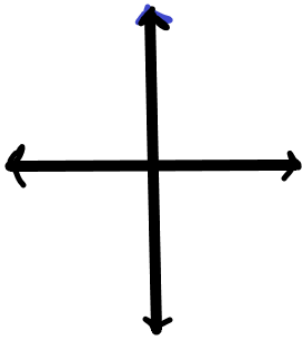
25. $f(x) = x^2$



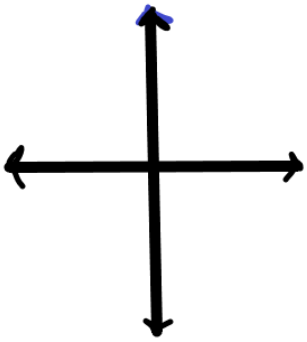
26. $f(x) = x^3$



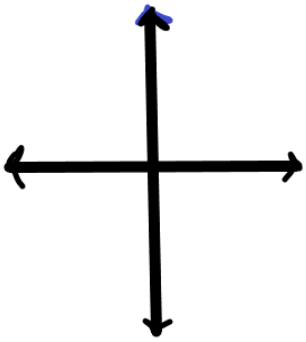
27. f(x) = | x|



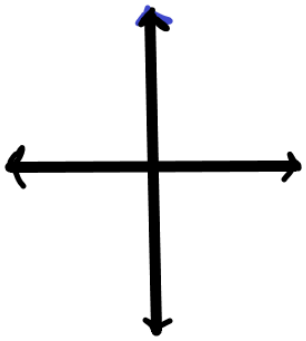
28. $f(x) = \frac{1}{x}$



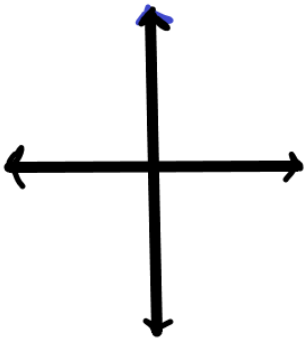
29. $f(x) = \frac{1}{x^2}$



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



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



32. X = -3