

Name: _____ / 25

There are 18 questions worth 25 points on this quiz. No aids (book, calculator, etc.) are permitted.
Show all work for full credit.

1. [1 point] Determine the domain and range of $f(x) = \frac{1}{x^2} + 1$. Write your answer in interval notation.

2. [1 point] For $f(x) = 8 - x^2$ and $g(x) = 2 - x$, find the composition $f \circ g$ and simplify your answer.

3. [1 point] Write the expression $\frac{x^7 y^4 z}{x^3 y^{-1} z^3}$ in the form $x^a y^b z^c$. That is, write the expression with all terms in the numerator.

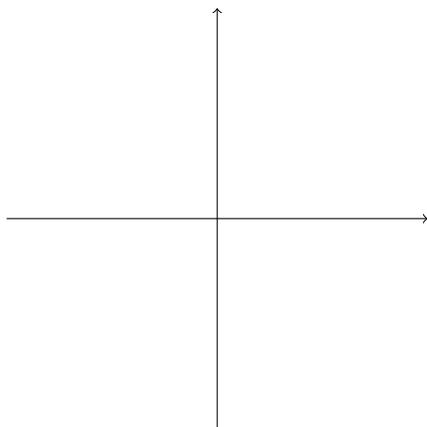
4. [1 point] A rectangle has length ℓ that is twice its width, w . Find an expression for the area, A , of the rectangle in terms of its width, w .

5. [2 points] Write an equation of the line between the points $(-4, 5)$ and $(2, 1)$.

Is the line increasing, decreasing, horizontal or vertical.

6. [1 point] Simplify the expression $\frac{2x^3+2x^2y}{4x^2+12xy}$ by cancelling any common factor in both the numerator and denominator.

7. [2 points] Sketch the graph of $f(x) = 4 - x^2$. Label any x - or y -intercepts in your sketch.



asymptote(s)? _____

8. [2 points] Use the piecewise defined function $f(x) = \begin{cases} \frac{x}{x-1} & x \leq 0 \\ \sqrt{x} & x > 0 \end{cases}$.

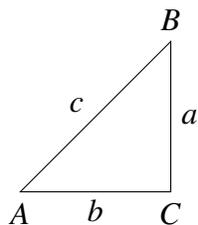
a. Find $f(-1)$.

b. Determine x such that $f(x) = 4$.

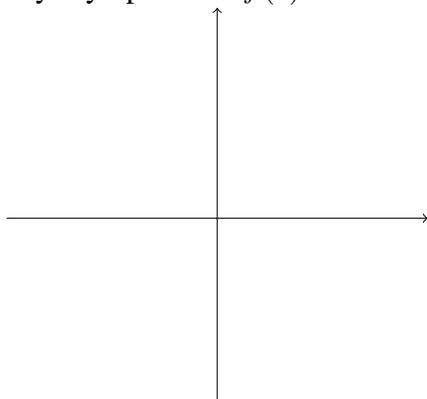
9. [1 point] Evaluate $\cos(4\pi/3)$ exactly.

10. [1 point] Solve the equation $\sin(x) + 1 = 0$ on the interval $0 \leq x < 2\pi$.

11. [1 point] In the right triangle below, $a = 4$ and $c = 5$. Determine the value of $\tan(A)$, the tangent function at angle A .



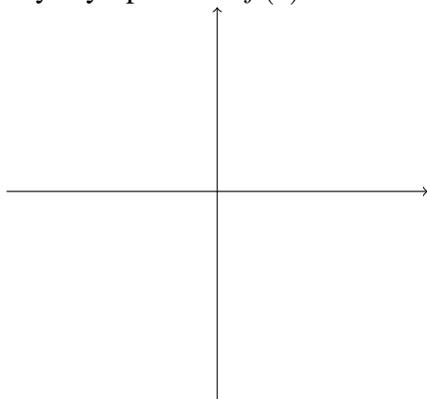
12. [2 points] Sketch the graph of $f(x) = e^{-x} + 1$. Label any x - or y -intercepts. Give the equation of any asymptotes of $f(x)$.



asymptote(s)? _____

13. [1 point] Solve the equation $18 - 4^x = 10$.

14. [2 points] Sketch the graph of $f(x) = \ln(x + 1)$. Label any x - or y -intercepts. Give the equation of any asymptotes of $f(x)$.

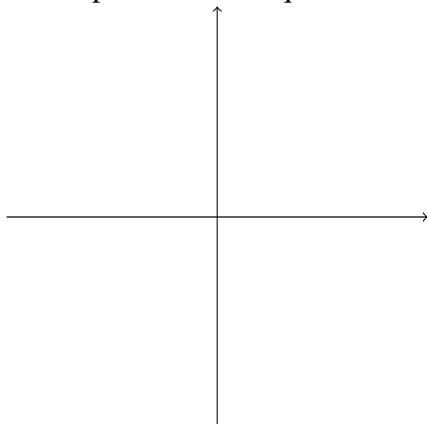


asymptote(s)? _____

15. [1 point] Solve the equation $\frac{\ln(x-1)}{3} = 4$.

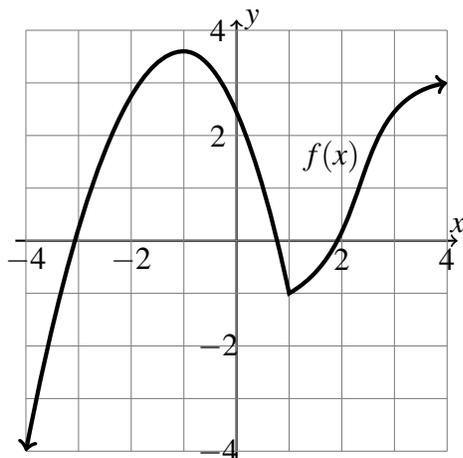
16. [1 point] Solve the inequality $x^2 \geq 9$. Write your answer in interval notation.

17. [2 points] Sketch the graph of $f(x) = 3 \cos(x)$ on the interval $0 \leq x \leq 2\pi$. Label any x - or y -intercepts. Give the equation of any asymptotes of $f(x)$.



asymptote(s)? _____

18. [2 points] Use the graph of $f(x)$ below to answer the questions.



a. Estimate $f(0)$. _____

b. Estimate an x -value such that $f(x) = -2$. _____