

Mr. Bradshaw

Math 101A Ch. 0 Sample Test

1. Find the equation of the line through the points $(3, 12)$ and $(9, -1)$.
2. Find the equation of the line perpendicular to the line $y = 4$ and through the point $(2, -9)$.
3. Find the domain of the function $f(x) = \sqrt{16 - 5x^2}$.
4. Find the equations of vertical asymptotes of the function
$$f(x) = \frac{x^2 - 1}{(x - 1)(x - 3)(x + 5)}.$$
5. Given the set of data points $\{(0, 10), (3, 6), (6, 1), (9, -5)\}$, use linear interpolation to find $f^{-1}(5.5)$.
6. Find a function of the form $f(x) = ae^{bx}$ that satisfies $f(0) = 6$ and $f(3) = 2$.
7. Write $\sin\left(\operatorname{arcsec}\left(\frac{3}{x}\right)\right)$ without any trig functions. What is the domain of this function?
8. A surveyor stands 80 feet from the base of a building and measures an angle of 47° to the top of the building. If the surveyor's eyes are five feet, three inches above the ground, how tall is the building? assume the ground is level and the building is vertical.
9. You are standing on level ground 8 feet from a vertical wall. If you look at the bottom of a poster on the wall, your angle of elevation is 10° . If you look at the top of the poster, your angle of elevation is 20° . How tall is the poster?
10. In golf, the diameter of the hole is 4.5 inches. Your ball is currently 5 feet from the front edge of the hole. If you draw lines from your ball to the left and right edges of the hole, you can model the path that the ball follows to the hole. What is the angle between these lines?
11. Suppose that the ticket sales of an airline (in thousands of dollars) is given by $s(t) = 110 + 2t - 15 \sin\left(\frac{\pi t}{6}\right)$, where t is measured in months. What month corresponds to $t = 0$? Explain your answer.

12. Find the solution(s) to $\frac{x^5}{7} = x^2 - \cos x$.

13. The graph of $f(x)$ is on the board. Sketch the graph of $f(|x|)$.

14. The graph of $f(x)$ is on the board. Sketch the graph of $|f(x)|$.