

Math 125 Quiz 1

Explain in your own words what is meant by the equation

$$\lim_{x \rightarrow 2} f(x) = 5$$

Is it possible for this statement to be true and yet $f(2) = 3$? Explain.

Math 125 Quiz 2

Evaluate, if it exists,

$$\lim_{x \rightarrow 2} \frac{x^2 + x - 6}{x - 2}$$

Show your work!

Math 125 Quiz 3

The fuel consumption (measured in gallons per hour) of a car traveling at a speed of v miles per hour is $c = f(v)$.

- What is the meaning of the derivative $f'(v)$? What are the units?
- Write a sentence (in laymans's terms) that explains the meaning of the equation $f'(20) = -0.05$.

Math 125 Quiz 4

A manufacturer produces bolts of fabric with a fixed width. The quantity q of the fabric (measured in yards) that is sold is a function of the selling price p (in dollars per yard), so we can write $q = f(p)$. Then the total revenue earned with selling price p is $R(p) = pf(p)$.

- What does it mean to say that $f(20) = 10,000$ and $f'(20) = -350$?
- Assuming the values in part (a), find $R'(20)$ and interpret your answer.

Math 125 Quiz 5

- The curve $y = |x|/\sqrt{2-x^2}$ is called a **bullet-nose curve**. Find an equation for the tangent line to this curve at the point $(1, 1)$.
- Illustrate part (a) by graphing the curve and the tangent line on the same screen (and show me what you get on this paper).

Math 125 Quiz 6

The equation $x^2 - xy + y^2 = 3$ represents a "rotated ellipse," that is, an ellipse whose axes are not parallel to the coordinate axes. Find the points at which this ellipse crosses the x -axis and show that the tangent lines at these points are parallel.

Math 125 Quiz 7

A plane flying with a constant speed of 300 km/h passes over a radar station at an altitude of 1 km and climbs at an angle of 30° . At what rate is the distance from the plane to the radar station increasing a minute later?

Math 125 Quiz 8

The illumination of an object is directly proportional to the strength of the source and inversely proportional to the square of the distance from the source. If a light source is 100 feet from an object, at what rate is the illumination changing if the distance is increasing at 2 feet per second?

Math 125 Quiz 9

Find f , if $f''(x) = 6x + 12x^2$.

Math 125 Quiz 10

Use a calculator to make a table of values of the right Riemann sums, R_n for the integral $\int_0^\pi \sin x dx$ with $n = 5, 10, 50$, and 100 . What do these numbers appear to be approaching?

Math 125 Quiz 11

The linear density of a rod of length 4 m is given by $\rho(x) = 9 + 2\sqrt{x}$ measured in kilograms per meter, where x is measured in meters from one end of the rod. Find the total mass of the rod.

Math 125 Quiz 12

Find the derivative of $g(x) = \int_{2x}^{3x} \frac{u^2 - 1}{u^2 + 1} du$.