

Turn-in problems (Math 1560 Fall 2009)

(#1 due Sept 15) Calculate the average rate of change of the function

$$g(x) = \frac{12}{x}$$

on the interval $[1, 4]$. *Show your work!*

(#2 due Sept 22) Use appropriate **limit laws** to find

$$\lim_{x \rightarrow 0} \frac{\sqrt{2x+9} - 3}{x}.$$

(#3 due Sept 29) You may turn in **one or both** parts of this problem.

(a) Find $\lim_{t \rightarrow 0} \frac{\sin(3t)}{2t}$.

(b) Let $f(x) = \begin{cases} x + 2 & \text{if } x \leq -1 \\ 2x^2 - 3 & \text{if } x > -1 \end{cases}$

Is $f(x)$ **continuous from the right** at $x = -1$?

(#4 due Oct 6) You may turn in **one or both** parts of this problem.

(a) Show the equation $x^3 = x^2 + 3x$ has a solution that is between 2 and 3.

(b) Let $f(x) = 4x^2 + 7$.

Use the **definition** of derivative (and appropriate limit laws) to find the derivative of $f(x)$ at a .

(#5 due Oct 13) Calculate

$$\frac{d}{dx} \left((7x^5 + 3x - 19)(\sin x - 5 \csc x) \right).$$

(#6 due Oct 20) Find $\frac{dy}{dx}$ if $4x^2 + y^2 = 3 \tan x + 7e^y$.