

Name:

ID:

Instructions: Show your work clearly. Good luck.

Problem 1. (5 points) If

$$y = \frac{(x+2)(3x-c)}{x+5},$$

where c is a constant, find $\frac{dy}{dx}$.**Problem 2.** (5 points) Find the equation of the normal line to the function

$$f(x) = e^x(\sin x + \cos x),$$

when $x = 0$.**Bonus Problem.** Find $\lim_{x \rightarrow \infty} x(\cos \frac{1}{x} - 1)$.