

Problem Set 3
MA104, Spring 2006
DUE: February 6, 2006
Value: 30 points

Instructor: Dr. Leigh Noble

Assigned: January 31, 2006

Recall that this graded assignment must be accompanied by appropriate documentation as per the USMA *Documentation of Written Work*. The assignment is considered late if not turned in by the beginning of class on the due date.

1. Use the definition of derivative to find the derivative of the function $f(x) = \frac{x}{x-3}$.
2. Using the function in problem 1 above, calculate the following. Show your work or justify your answer.
 - (a) $f'(3)$
 - (b) $f'(0)$
3. Differentiate the following functions using the derivative rules from Sections 3.1 and 3.2 in the text. State the rule(s) you are using and implement them step-by-step.

(a) $y = \frac{2x^2 - 3\sqrt{x}}{x}$

(b) $y = \frac{4}{t^5} + 5\pi t$