

MATH 1510 Problem Set 2
Distribution dates: October 23, 24, 2007
Due Dates: October 29, 30, 2007

1. Find $f'(x)$. DO NOT SIMPLIFY YOUR ANSWERS.

(a) $f(x) = (x + \cos(\pi x))^3$

(b) $f(x) = (5^{x^2+x}) \log_3(x)$

(c) $f(x) = \frac{\tan x - e^{-x}}{e^{3x}}$

(d) $f(x) = (x+1)^{\ln x} + \sin^3 x^2$

2. Find $\lim_{x \rightarrow 0} \frac{(x^2 - 1) \sin^2(\pi x)}{x^2}$.

3. Find $f^{(21)}(x)$ if $f(x) = e^{3x}$.

4. Find an equation of the tangent line, at the origin, to the curve described by
 $2e^{-x} + e^y = 3e^{x-y}$.

5. Find an equation of the normal line to the curve $ye^{xy} = 2$ at the point
with coordinates $(\ln 2, 1)$.