MAC 2311 Calculus—Analytic Geometry
Homework #2

Please hand in your solutions by February 26, 2007, 7 p.m.
Solutions that are handed in later will be graded with 0 points.

Problem 1: Horizontal Asymptotes (8P) Check the following functions for horizontal asymptotes. If horizontal asymptotes exist, specify them.

1. $f(x) = \frac{x^{331349}+4\cdot x^{2653}-5}{2\cdot x^{331347}-7\cdot x^8-19}$
2. $g(x) = 3 \cdot (e^{-x^2} - e)$
3. $h(x) = \frac{\sqrt{2}\cdot x^{3312}+41\cdot x^2-4}{7\cdot x^{3312}-71\cdot x+8}$
4. $\ell(x) = 3 + \frac{\sqrt[5]{x}}{\sqrt[3]{x}+1}$

Problem 2: Rules for Differentiation (6P) Determine the first derivative $f'(x)$ for the following functions $f = f(x)$:

1. $f(x) = \sqrt{x^2 + 37}$
2. $f(x) = \cos(\frac{3\cdot x^2}{x+2})$
3. $f(x) = \sqrt[5]{e}^{\sqrt[3]{x}}$

Problem 3: Implicit and Logarithmic Differentiation (6P) Determine the first derivative y' of the following functions $y = y(x)$:

1. $y^{131} \cdot x + x + 7 \cdot y = \log_{17}(x)$
2. $y = (\ln x)^{x/2}$

Good luck, have fun & please do not hesitate to ask if there are problems!!!