Math. 128 Sample test 3

1) Find dy/dx using implicit differentiation $2x^3 - 3y^2 = 4$

2) Use differentials to approximate
   a) $(99.7)^{1/2}$
   b) the change in value of function $f(x) = 2x^{1/2} - 3$ as $x$ changes from 4 to 4.5.
   c) ex. 34/769
   choose one

3) Find interval(s) where $f(x) = x^3/3 - x^2 + x - 3$ is increasing

4) Find horizontal and vertical asymptotes (if any) of $f(x) = (x^2 + x)/[(x(x - 1)]$.

5) Find absolute max. value of $f(x) = x/(x^2 + 1)$ on [0, 5].

6) Find relative max/min (if any) of $f(x) = 3x^4 - 2x^3 + 4$.

7) ex. 35/831

8) ex. 43/758, ex. 50/759, ex. 30/745 (choose one)

9) Solve for $x$, $12 - e^{0.4x} = 3$.

10) Find the equation of the t-line to the graph of $f(x) = e^{2x-3}$ at (2/3, 1).

11) Find derivative of $f(x) = (e^x + 1)/e^x$.

12) Find inflection point of $f(x) = xe^{-2x}$.

13) Find second derivative of $f(x) = 2(lnx)^{3/2}$.

14) Find the general antiderivative of (choose one)
   a) $f(x) = 3x - 1$
   b) $f(x) = 7$
   c) evaluate $\int dx$

Choose any 11 exercises. This sample test does not represent the whole material included in sections 11.5 – 14.1. It is absolutely necessary to complete all exercises listed in syllabus as homework.