MATH 1080, SPRING 2006, HW SET 10

You need to show all your work and explain with following the guideline described in the class webpage to get the full credit. And please staple your HW papers.

HW 10 Due on Thursday 04/13/06

Before doing this HW, go over the definitions with examples given in class.

1. Find the area of the region surrounded by the following graph of f and the x-axis.

(1) $f(x) = -(x-1)(x-3)^2$

(2) $f(x) = (x-1)^3(x+1)$

2. Find $F(x)$ where $f(x) = F'(x)$ is given below with the specific condition on $F(a)$. The Fundamental Theorem of Calculus II may be helpful.

(1) $f(t) = \dfrac{1}{t} + 1$, with $F(1) = 2$.

(2) $f(t) = t^3 + 3t^2 - 1$, with $F(0) = 1$.

(3) $f(t) = e^{3x-1} + 1$, with $F\left(\dfrac{1}{3}\right) = \dfrac{5}{3}$.

3. Evaluate the followings by finding $F(x)$ such that $F'(x) = f(x)$ by substitution.

(1) $\int_0^{\frac{\pi}{6}} \sin x \cos x dx =$

(2) $\int_1^2 (x-1)^{20} dx =$

(3) $\int_0^1 e^{3x-1} dx =$

(4) $\int_0^1 x e^{2x^2-1} dx =$

(5) $\int_e^{e^2} \dfrac{1}{x \ln x} dx =$

Date: Due on Thursday 04/06/06.