Math 1571 March 8, 2006
sample Test 2

I. Find $\frac{dy}{dx}$ for each of the following:

1. $y = \sqrt{x^3 \tan(x^4)}$
2. $y = \cos(\tan(x))$
3. $x \sin(y) = y - 1$
4. $y\sqrt{(x-1)} + x\sqrt{(y-1)} = xy$
5. $y = \dfrac{(x-1)(x-4)}{(x-2)}$
6. $y = \dfrac{\sin(2x)}{x}$

II. Find $\frac{dy}{dx}$ for each of the following:

1. If $y = \dfrac{1}{\sqrt{4x - 3x^2}}$
2. $y = 3x + \cos(x)$
3. $y = \dfrac{x^3}{4 - \sin(2x)}$
4. $y = [5x^2 + \cos(2x)]^3$
5. $y = \sin(x)\cos(2x)$
6. $y = \tan^4(5x^2 - 3x)$
7. $yx - y^2 = 6$

III.Simplify Find y'' by implicit differentiation and simplify.

1. $x^2 - y^2 = 1$
2. If $y = 2\cos(x) + \sin^2(x)$ find y', y''
3. If $f'(x) = \dfrac{x}{(x+2)(x+3)}$, where is f increasing/decreasing.($Note : f' is given$)
4. If $f''(x) = \dfrac{5x}{x+1}$ then where is f is concave upward/downward.($Note : f'' is given$)

IV. Find for $f(x)$

a. The Domain,
b. The Intercepts,
c. Symmetry,
d. Asymptotes(horizontal and vertical),
e. Intervals of increasing/decreasing,
f. Max/min,
g. Concave up/down,
h. Points of inflection and
g. Sketch.
where the function is:

1. $y = x^4 - 2x^2$
2. $y = \dfrac{x^2 - 1}{x}$

3. $y = \dfrac{x^2+1}{(x^2-4)}$
4. $y = \cos(x) + \sin(x)$ on the intreval $[0, 4\pi]$.
5. $y = \dfrac{(x)}{2} - \sin(x)$ on the intreval $[0, 3\pi]$.
6. If $f(x) = \dfrac{x}{(x+2)(x+3)}$,
7. If $f(x) = \dfrac{5x}{x+1}$
8. $y = \frac{1}{3}x^3 - \frac{1}{2}x^2 + 1$
9. $y = \frac{2}{3}x^3 - x^2 - 4x + 2$
10. $y = x^4 - 2x^2$