MATH 205
Spring 2002

SAMPLE QUESTIONS FOR QUIZ 6
PART 1

Dr. Bogacki

Differentiate each function

1. $f(x) = \tan(x) + \dfrac{1}{\cos(x)} = \tan(x) + \sec(x)$

$$\frac{d}{dx} f(x) = (\sec(x))^2 + (\sec(x))\cdot(\tan(x))$$

2. $h(x) = (2x + \cos(x))\cdot\left(x^2 - e^x + \pi\right)$

$$\frac{d}{dx} h(x) = \left[\frac{d}{dx}(2x + \cos(x))\right]\cdot\left(x^2 - e^x + \pi\right) + (2x + \cos(x))\cdot\frac{d}{dx}\left(x^2 - e^x + \pi\right)$$

$$= (2 - \sin(x))\cdot\left(x^2 - e^x + \pi\right) + (2x + \cos(x))\cdot\left(2x - e^x\right)$$

3. $f(x) = \dfrac{\sec(x)}{1 - \sqrt{x}}$

$$\frac{d}{dx} f(x) = \frac{\left[\frac{d}{dx}(\sec(x))\right]\cdot\left(1 - \sqrt{x}\right) - \sec(x)\cdot\frac{d}{dx}\left(1 - \sqrt{x}\right)}{\left(1 - \sqrt{x}\right)^2} = \frac{\sec(x)\cdot\tan(x)\cdot\left(1 - \sqrt{x}\right) - \sec(x)\cdot\left(\frac{-1}{2}x^{\frac{-1}{2}}\right.}{\left(1 - \sqrt{x}\right)^2}$$

4. $g(x) = \dfrac{\cos(x) - 1 - \sin(x) - (\sin(x))^2}{\sin(x)} = \cot(x) - \csc(x) - 1 - \sin(x)$

$$\frac{d}{dx} g(x) = -(\csc(x))^2 + \csc(x)\cdot\cot(x) - 0 - \cos(x)$$

5. $g(x) = \sin(2x) = 2\cdot(\sin(x))\cdot(\cos(x))$

$$\frac{d}{dx} g(x) = 2\cdot[\,\cos(x)\cdot\cos(x) + \sin(x)\cdot(-\sin(x))\,] = 2\cdot\left[(\cos(x))^2 - (\sin(x))^2\right] = 2\cdot\cos(2x)$$