

13 June 2007

**Quiz 6: Math 135, Section C7**

Find the derivative of the following functions:

1.  $f(x) = x^3 - 4x^2 + 6x + 9$

2.  $g(x) = \tan x$

3.  $h(x) = e^x \sin x$

4.  $i(x) = \frac{5 + x^2}{x^4}$

5.  $j(x) = e^\pi$

6.  $k(x) = \ln(x^4)$

Hint for problem 4: you don't have to use the quotient rule!

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1.

$$\frac{d}{dx}(x^3 - 4x^2 + 6x + 9) = 3x^2 - 8x + 6$$

2.

$$\frac{d}{dx} \tan x = \sec^2 x$$

3.

$$\frac{d}{dx}(e^x \sin x) = \frac{d}{dx} e^x \sin x + e^x \frac{d}{dx} \sin x = e^x \sin x + e^x \cos x$$

4.

$$\frac{d}{dx} \left( \frac{5 + x^2}{x^4} \right) = \frac{d}{dx} \left( \frac{5}{x^4} + \frac{1}{x^2} \right) = \frac{-20}{x^5} - \frac{2}{x^3}$$

5.

$$\frac{d}{dx} e^\pi = 0$$

6.

$$\frac{d}{dx}(\ln x^4) = \frac{d}{dx}(4 \ln x) = \frac{4}{x}$$