#2 { 2 PT FOR PRD. RULE; 1 PT POWER RULE; 2 PT TRIG DERIV.

#1 { 1 PT. PER PART

MAT 106
Quiz #5
September 13, 2004

Name: Key

You may not use your notes. Please show all of your work. An answer without justification will receive little credit.

(1) Suppose that $F(x), G(x), f(x)$ and $g(x)$ are functions which are differentiable everywhere and that $F'(x) = f(x)$ and $G'(x) = g(x)$. Compute the following.

a.) $\frac{d}{dx}[F(x) + G(x)]$ $= f(x) + g(x)$

b.) $\frac{d}{dx}[3F(x)]$ $= 3f(x)$

c.) $\frac{d}{dx}[F(x) - G(x)]$ $= f(x) - g(x)$

d.) $\frac{d}{dx}[F(x) \cdot G(x)]$ $f(x)G(x) + g(x)F(x)$

e.) $\frac{d}{dx}[F(x)/G(x)]$ $\frac{f(x)G(x) - g(x)F(x)}{(G(x))^2}$

(2) Compute $\frac{d}{dx}[x^{100}\cos(x)]$

$= \frac{d}{dx}(x^{100})\cos(x) + \frac{d}{dx}(\cos(x))\,x^{100}$

$= 100x^{99}\cos(x) - \sin(x)\,x^{100}$

$= 100x^{99}\cos(x) - x^{100}\sin(x)$.