MATH 122 Spring, 2012 Quiz #4 Name: M²

In each case compute the derivative. There is no need to "simplify". Your answer should be in the form derivative (in some notation) equals something.

1. $f(x) = 4\ln(x^2+6)$

$$f'(x) = 4\frac{1}{x^2+6}2x = \frac{8x}{x^2+6}$$

2. $h(x) = e^{8x-10x^3}$

$$h'(x) = e^{8x-10x^3}(8-30x^2)$$

3. $w = \frac{3r^2}{5r+1}$

$$\frac{dw}{dr} = \frac{(5r+1)(6r) - 3r^2(5)}{(5r+1)^2}$$

4. $g(z) = (z^4+z^2)^{3/5}$

$$g'(z) = \frac{3}{5}(z^4+z^2)^{-\frac{2}{5}}(4z^3+2z)$$

5. $y = \sqrt{t}e^{-t^3} = t^{\frac{1}{2}}e^{-t^3}$

$$y' = \frac{dy}{dt} = \sqrt{t}\,e^{-t^3}(-3t^2) + e^{-t^3}\frac{1}{2}t^{-\frac{1}{2}}$$