Mathematics 122

Quiz #18 Name: Key

You must show your work to get full credit.

Compute the following derivatives.

$y = 3(x^3 + x)^4$ $\quad y' =$ $12(x^3+x)^3(3x^2+1)$

$R(q) = 3e^{q^2}$ $\quad \dfrac{dR}{dq} =$ $3e^{q^2}(2q) = 6qe^{q^2}$

$w = \dfrac{3}{(z^2+1)^3} = 3(z^2+1)^{-3}$ $\quad \dfrac{dw}{dz} =$ $-9(z^2+1)^{-4}(2z) = -18z(z^2+1)^{-4}$

$f(t) = 3\ln x^2 + 2x$ $\quad f'(t) =$ $\frac{3}{x^2}(2x) + 2 = \frac{6}{x} + 2$

$h(s) = \ln(e^s)$ $\quad h'(s) =$ 1

$h'(s) = \frac{1}{e^s}(e^s)' = \frac{e^s}{e^s} = 1$