Mathematics 122

Quiz #20 Name: Key

You must show your work to get full credit.

Let a, b and c be constants. Compute the following derivatives.

(1) $y = 3(x^2+7)^5$ $\quad y' =$ $6x(x^2+7)^4$

$y' = 3(x^2+7)^4(2x)$ ← both are ok ↗

(2) $f(t) = 4e^{2t^3+3t^2}$ $\quad f'(t) =$ $24(t^2+t)e^{2t^3+3t^2}$

$f'(t) = 4e^{2t^3+3t^2}(6t^2+6t)$ ↖ both are ok. ↗

(3) $w = 6\ln(e^z+1)$ $\quad \dfrac{dw}{dz} =$ $\dfrac{6e^z}{e^z+1}$

$\dfrac{dw}{dz}$

(4) $A(r) = a\sqrt{1-r^2} = a(1-r^2)^{\frac{1}{2}}$ $\quad A'(r) =$ $-ar(1-r^2)^{-\frac{1}{2}}$

$A'(r) = \dfrac{a}{2}(1-r^2)^{-\frac{1}{2}}(-2r)$ ← both are ok. ↗

(5) $y = be^{\frac{1}{x}} + c\ln(3x+2)$ $\quad \dfrac{dy}{dx} =$ $-bx^{-2}e^{x^{-1}} + \dfrac{3c}{3x+2}$

$= be^{x^{-1}} + c\ln(3x+2)$ ↗

$\dfrac{dy}{dx} = be^{x^{-1}}(-1)x^{-2} + \dfrac{c\cdot 3}{3x+2}$ both are ok.

↖