Mathematics 122

Quiz #17 Name: Key

You must show your work to get full credit.

Let a and b be constants, then find the derivatives of the following:

1 pt (1) $f(x) = 3e^{2x}$ $f'(x) =$ $6e^{2x}$ or $3e^{2x} \cdot 2$

1 pt (2) $w = 4e^{z^3}$ $\frac{dw}{dz} =$ $12z^2e^{z^3}$ or $4e^{z^3}(3z^2)$

$w' = 4e^{z^3}(z^3)'$

$= 4e^{z^3}(3z^2)$

1 pt (3) $A(r) = 4\ln(r^2 + 5r)$ $A'(r) =$ $\frac{8r+20}{r^2+5}$ or $\frac{4(2r+5)}{r^2+5r}$

$A' = \frac{4}{r^2+5r}(r^2+5r)'$

$= \frac{4(2r+5)}{r^2+5r}$

1 pt (4) $C = 5\sqrt{q^3 + 5q} = 5(q^3+5q)^{\frac{1}{2}}$ $\frac{dC}{dq} =$ $\frac{5(3q^2+5)}{\sqrt{q^3+5q}}$ or

$\frac{dC}{dq} = \frac{5}{2}(q^3+5q)^{-\frac{1}{2}}(3q^2+5)$

1 pt (5) $h(t) = be^{at^2}$ $h'(t) =$ $b e^{at^2}(2at)$ or $2abte^{at^2}$