Mathematics 122

Quiz #15 Name: Key

You must show your work to get full credit.

2 pts (1) Let a be a constant. Find the equation of the tangent line to $y = x^2 + ax$ at the point where $x = x_0$.

$y_0 = x_0^2 + ax_0$

$y' = 2x + a$

1 pt for this line is made up. $m = y'(x_0) = 2x_0 + a$ to here

$y - y_0 = m(x - x_0)$

$y - x_0^2 - ax_0 = (2x_0 + a)(x - x_0)$

or $y = x_0^2 + ax_0 + (2x_0 + a)(x - x_0)$

(2) Find the the derivatives of the following functions.

1 pt (a) $f(x) = -7(3)^x$ $f'(x) = -7\ln(3)\,3^x$

1 pt (b) $w = 4e^z + 3z^4$ $\dfrac{dw}{dz} = 4e^z + 12z^3$

1 pt (c) $A(t) = 13\ln(t)$ $A'(t) = \dfrac{13}{t}$