Quiz #17   Name: _____ Key _____

You must show your work to get full credit.

1. Let c and k be constants. Then find the following derivative
$f(t) = 2ce^t - 2c(5)^t + kce^{2t} - 4e^k$.

Note $(4e^k)' = 0$

$f'(t) = \underline{2ce^t - 2c(5)^t \ln(5) + 2k \, e^{2t}}$

because it is constant

2. Find the equation of the tangent line to $y = e^{2x}$ at the point where $x = 0$.
Reminder: The equation will have an equal sign in it. So make sure you answer has an equal sign.

The equation of the line through (x_0, y_0)
with slope m is

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

In our case $x_0 = 0$ so $y_0 = y(0) = e^{2(0)} = 1$

$y' = 2e^{2x}$ so $m = y'(0) = 2e^0 = 2$

Thus the equation is

$$y = 1 + 2(x - 0)$$

i.e $y = 1 + 2x$