Quiz #10   Name: _____Key_____

You must show your work to get full credit.

1 pt

(1) Let $f(x) = \dfrac{x^2 - 1}{2x - 3}$.

(a) What is the derivative $f'(2)$? $f'(2) =$ ___-2.00001___   or just -2.0

$nDeriv((x^2-1)/(2x-3), x, 2) = -2.00001$

1 pt

(b) What is tangent line to $y = f(x)$ at $x = 2$? $y = 3 - 2(x-2)$ any x of these ok.

$y_0 = f(2) = \dfrac{2^2 - 1}{2(2) - 3} = \dfrac{3}{1} = 3$

$x_0 = 2$

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

becomes $y - 3 = -2(x - 2)$

$y = 3 - 2(x-2)$

$y - 3 = -2(x-2)$

$y = -2x + 7$

(2) Assume that weight, W, in grams of a cricket is a function of its length, L, in millimeters. That is $W = f(L)$.

1 pt

(a) What are the units for the derivative $\dfrac{dW}{dL} = f'(L)$?

grams/mm

2 pts

(b) If $f(15) = .8$ and $f'(15) = .05$ give an estimate for $f(15.4)$.

$\Delta L = 15.4 - 15. = .4$ $f'(15.4) \approx$ ___$.82$___

$\boxed{\Delta W \approx f'(15)\Delta L}$ 1 pt for writing some form of this.

$= (.05)(.4)$

$= .02$

so $f(15.4) \approx f(15) + \Delta W$

$= .8 + .02 = .82$