Math 1A (7:30am – 8:20am)
Group Quiz 3
Wed Oct 15, 2008

Group Members' Names: _____
_____
_____

SCORE: ___ / 10 POINTS

NO CALCULATORS ALLOWED

Find the equation of the tangent line to $y = \frac{x}{2-x}$ at $x = -1$.

SCORE: ___ / 5 POINTS

DO NOT USE DIFFERENTIATION SHORTCUTS.

POINT = $\left(-1, -\frac{1}{3}\right)$

$$m_{tan} = \lim_{h\to 0} \frac{\frac{-1+h}{2-(-1+h)} + \frac{1}{3}}{h} \quad 1$$

$$= \lim_{h\to 0} \frac{\frac{h-1}{3-h} + \frac{1}{3}}{h}$$

$$= \lim_{h\to 0} \frac{3(h-1)+3-h}{3h(3-h)}$$

$$= \lim_{h\to 0} \frac{2h}{3h(3-h)} \quad 2$$

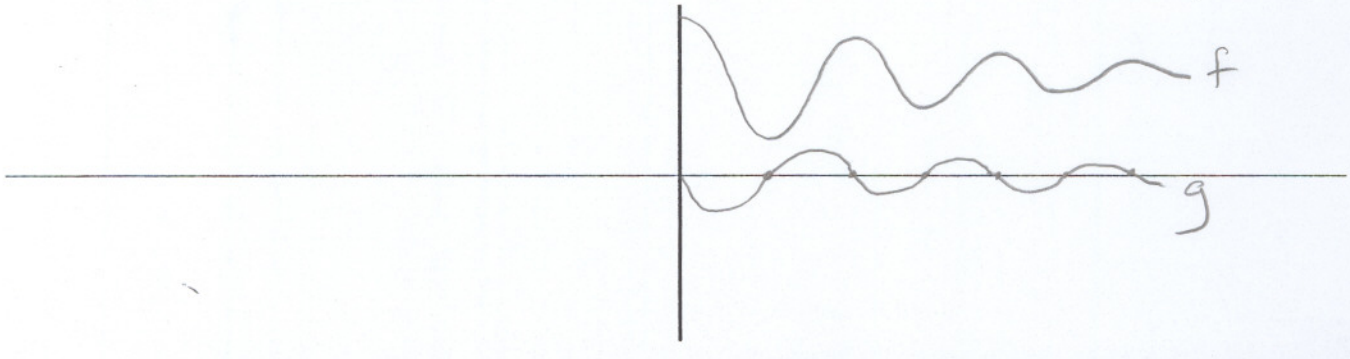
$$= \frac{2}{9} \quad 1$$

$$y - -\frac{1}{3} = \frac{2}{9}(x - -1)$$

$$y = \underbrace{-\frac{1}{3}}_{\frac{1}{2}} + \underbrace{\frac{2}{9}(x+1)}_{\frac{1}{2}}$$

Let $f(t)$ represent the height of a bungee jumper t seconds after she jumps from a bridge.
Let $g(t)$ represent her velocity (use + for upward velocity and – for downward velocity).
Sketch graphs of $f(t)$ and $g(t)$ on the same set of axes.

SCORE: ___ / 3 POINTS



1/2 POINT EACH

Suppose that $f(t)$ represents Harpo's weight (in pounds) t weeks after he committed to starting a new diet.

SCORE: ___ / 2 POINTS

Interpret the statement $\lim_{h\to 0} \frac{f(5+h)-f(5)}{h} = \frac{1}{2}$. **Be as specific as possible, using the correct units for all relevant numbers.**

FIVE WEEKS AFTER HE COMMITTED TO STARTING A NEW DIET, HARPO WAS GAINING WEIGHT AT $\frac{1}{2}$ POUND PER WEEK