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 $y = \sqrt{x^2+3}$ at $x = -1$.

SCORE: ___ / 5 POINTS

DO NOT USE DIFFERENTIATION SHORTCUTS.

POINT = $(-1, 2)$

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

$$= \lim_{h\to 0} \frac{\sqrt{h^2-2h+4} - 2}{h}$$

$$= \lim_{h\to 0} \frac{h^2-2h+4-4}{h(\sqrt{h^2-2h+4}+2)}$$

$$= \lim_{h\to 0} \frac{h-2}{\sqrt{h^2-2h+4}+2} \quad 2$$

$$= \frac{-2}{\sqrt{4}+2} = -\frac{1}{2} \quad 1$$

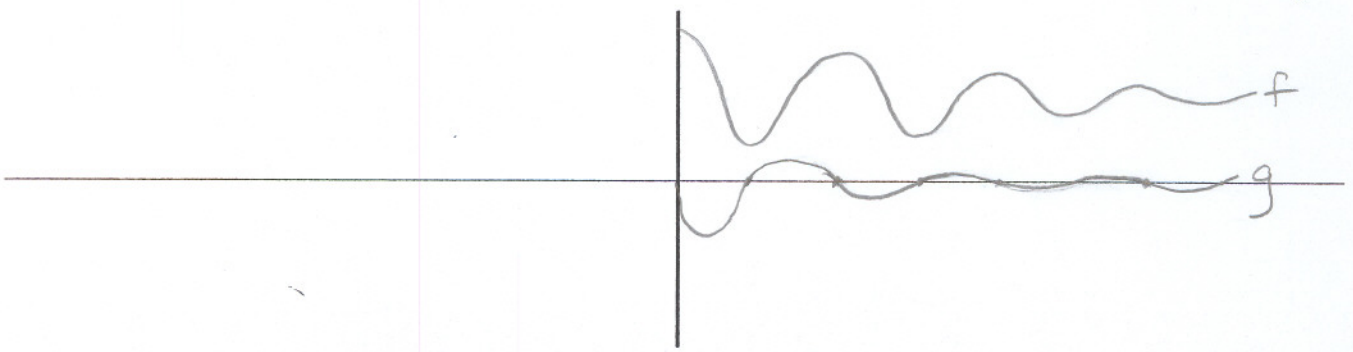
$y - 2 = -\frac{1}{2}(x - -1)$

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

$\frac{1}{2}$ $\frac{1}{2}$

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



Suppose that $f(t)$ represents Graham's weight (in kilograms) t months after he committed to starting a new exercise regimen. Interpret the statement $\frac{f(3)-f(1)}{2} = 5$. **Be as specific as possible, using the correct units for all relevant numbers.**

1/2 POINT EACH

SCORE: ___ / 2 POINTS

FROM THE FIRST MONTH TO THE THIRD MONTH AFTER HE COMMITTED TO STARTING A NEW EXERCISE REGIMEN, GRAHAM GAINED AN AVERAGE OF 5 KG PER MONTH