Math 1A (7:30am – 8:20am)
Quiz 1 Version A
Mon Jan 10, 2011

What month is your birthday ? ___ ___
What are the first 2 digits of your address ? ___ ___
What are the last 2 digits of your zip code ? ___ ___
What are the last 2 digits of your DeAnza ID number ? ___ ___

SCORE: ___ / 20 POINTS

UNLESS STATED OTHERWISE WRITE DOWN THE CALCULATIONS USED TO FIND YOUR ANSWERS

To find $\lim_{x \to -7^+} p(x)$, name 3 values of x for which you might want to know the value of $p(x)$. **SCORE: ___ / 2 POINTS**

$-6.9, -6.99, -6.999$

Some values for a function f are given in the table below. **SCORE: ___ / 4 POINTS**

x	–5	–3	–1	1	3	5
$f(x)$	13	5	2	–2	–11	–7

[a] Estimate the slope of the tangent line to $y = f(x)$ at $x = -1$ by finding and averaging the slope of 2 **appropriate** secant lines.

$m_1 = \frac{5-2}{-3-1} = -\frac{3}{2}$

$m_2 = \frac{-2-2}{1-1} = -2$

$\frac{1}{2}\left(-\frac{3}{2} + -2\right) = -\frac{7}{4}$

$\frac{1}{2}$ POINT EACH

[b] Do you think your estimate in [a] would be close to the actual slope of the tangent line ? Why or why not ?

NO, -3 AND 1 ARE NOT VERY CLOSE TO 1.

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

The position of an object travelling along a straight line is given by $s(t) = \sqrt{t-2}$. **SCORE: ___ / 2 POINTS**

Find the average velocity of the object for the time period beginning when $t = 3$ and lasting 0.2 second.
Round your answer to 3 decimal places.

$\frac{\sqrt{3.2-2} - \sqrt{3-2}}{3.2-3} = \frac{\sqrt{1.2} - 1}{3.2-3} \approx 0.477$

1 1

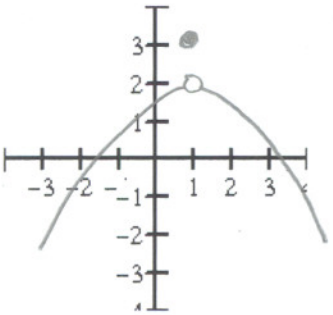
OR

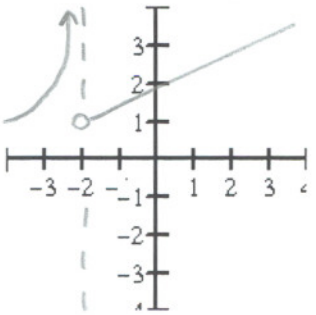
Sketch the graphs of functions that satisfy the following conditions, or write N/A if no such functions exist. **SCORE: ___ / 3 POINTS**

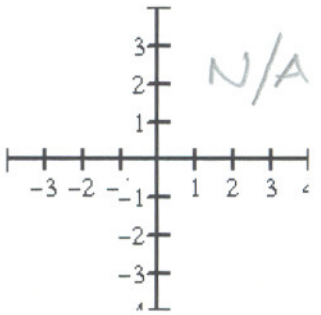
$f(1)$ exists, $\lim_{x\to 1} f(x)$ exists, $\lim_{x\to 1} f(x) \neq f(1)$

$\lim_{x\to -2^+} g(x) = 1$, $\lim_{x\to -2^-} g(x) = \infty$

$\lim_{x\to -3^-} h(x) = -1$, $\lim_{x\to -3} h(x) = 1$







The point P lies on the curve $y = \dfrac{x^3}{1+x}$. The $x-$coordinate of P is -2. **SCORE: ___ / 5 POINTS**

[a] If Q is the point $(x, \dfrac{x^3}{1+x})$, use your calculator to find the slope of the secant line PQ **(correct to 3 decimal places)** for the following values of x. **You do NOT need to write down the calculations you used.** ½ POINT EACH

x	–1.8	–1.98	–1.998	–2.002	–2.02	–2.2
slope of secant line	-3.550	-3.960	-3.996	-4.004	-4.040	-4.367

[b] Using the results of part (a) (and any additional values), guess the value of the slope of the tangent line to the curve at P.

-4 1

[c] Using the slope from part (b), find an equation of the tangent line to the curve at P.

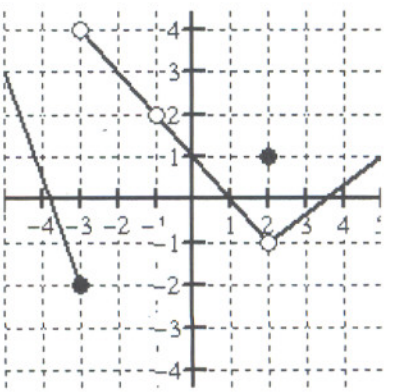
AT $x=-2$, $y=8$

$y-8=-4(x+2)$ OR $y=-4x$

1 OR

FILL IN THE BLANKS. The graph of a function f is shown on the right. **SCORE: ___ / 4 POINTS**

State the values of the following expressions, if they exist. Write DNE where appropriate.
You do NOT need to show work.



[a] $f(-3) =$ -2

[b] $\lim_{x\to -3} f(x) =$ DNE

[c] $\lim_{x\to -1} f(x) =$ 2

[d] $f(2) =$ 1

[e] $\lim_{x\to -3^+} f(x) =$ 4

[f] $f(-1) =$ DNE

[g] $\lim_{x\to 2} f(x) =$ -1

[h] $\lim_{x\to -2} f(x) =$ 3

½ POINT EACH