Math 1A (7:30am – 8:20am)
Quiz 1 Version B
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 $\lim_{x \to -5^+} p(x)$, name 3 values of x for which you might want to know the value of $p(x)$. **SCORE: ___ / 2 POINTS**

$-4.9, -4.99, -4.999$

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 $x = 3$ by finding and averaging the slope of 2 **appropriate** secant lines.

$m_1 = \frac{-2-(-11)}{1-3} = -\frac{9}{2}$

$m_2 = \frac{-7-(-11)}{5-3} = 2$

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

$\frac{1}{2}\left(-\frac{9}{2}+2\right) = -\frac{5}{4}$

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

NO. (½) 1 AND 5 ARE NOT VERY CLOSE TO 3. (½)

The position of an object travelling along a straight line is given by $s(t) = \sqrt{t+1}$. **SCORE: ___ / 2 POINTS**

Find the average velocity of the object for the time period beginning when $t = 3$ and lasting 0.1 second.
Round your answer to 3 decimal places.

$\frac{\sqrt{3.1+1}-\sqrt{3+1}}{3.1-3} = \frac{\sqrt{4.1}-2}{3.1-3} \approx 0.248$ (1)

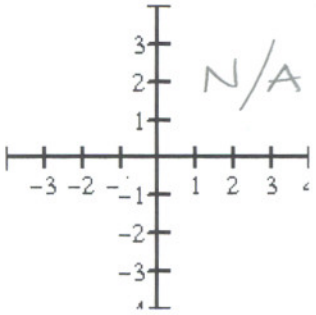
OR (1)

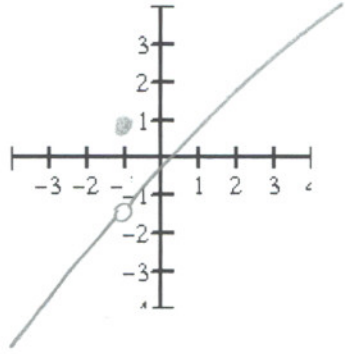
Sketch the graphs of functions that satisfy the following conditions, or write N/A if no such functions exist. **SCORE: ___ / 3 POINTS**

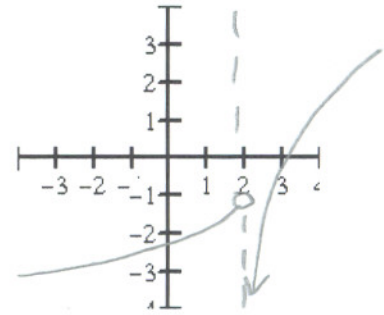
$\lim_{x\to -3^-} f(x) = -1$, $\lim_{x\to -3} f(x) = 1$

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

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







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

[a] If Q is the point $(x, \frac{x^3}{1+x})$, 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	−1.7	−1.97	−1.997	−2.003	−2.03	−2.3
slope of secant line	-3.271	-3.939	-3.994	-4.006	-4.059	-4.531

[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.

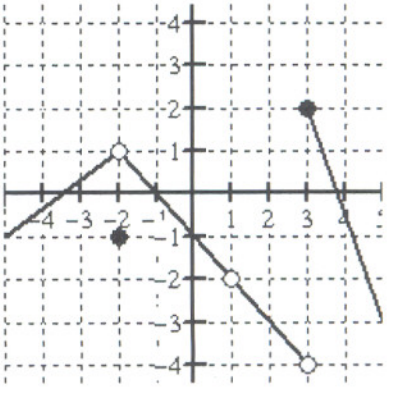
AT $x=-2$, $y=8$

1 OR

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

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] $\lim_{x\to 2} f(x) =$ −3

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

[c] $f(1) =$ DNE

[d] $\lim_{x\to 3^-} f(x) =$ −4

[e] $f(-2) =$ −1

[f] $\lim_{x\to 1} f(x) =$ −2

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

[h] $f(3) =$ 2

½ POINT EACH