Math 1A (10:30am – 11:20am)
Quiz 1 Version C
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 $\lim_{x \to -6^+} p(x)$, name 3 values of x for which you might want to know the value of $p(x)$. **SCORE: ___ / 2 POINTS**

$-5.9, -5.99, -5.999$

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.

$m_1 = \frac{13-5}{-5-(-3)} = -4$

$m_2 = \frac{2-5}{-1-(-3)} = -\frac{3}{2}$

$\frac{1}{2}\left(-4 + -\frac{3}{2}\right) = -\frac{11}{4}$

$\frac{1}{2}$ 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 (1/2) -5 AND -1 ARE NOT VERY CLOSE TO -3. (1/2)

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 0.2 second.
Round your answer to 3 decimal places.

$\frac{\sqrt{3.2+1} - \sqrt{3+1}}{3.2-3} = \frac{\sqrt{4.2}-2}{3.2-3} \approx 0.247$ (1) (1)

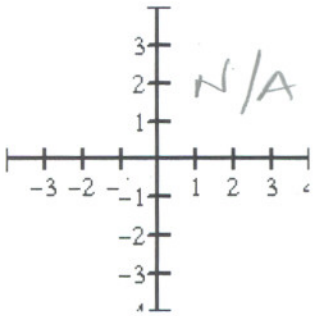
OR

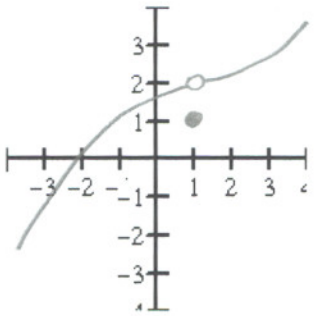
Sketch the graphs of functions that satisfy the following conditions, or write N/A if no such functions exist. **SCORE: ___ / 3 POINTS**

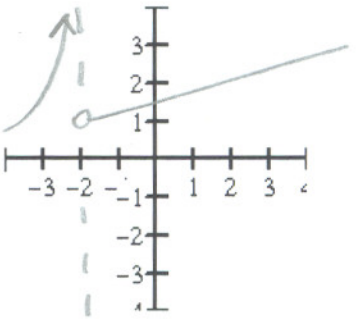
$\lim_{x\to -3^-} f(x) = -1$,
$\lim_{x\to -3^+} f(x) = 1$

$g(1)$ 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 $y = \dfrac{x^3}{1+x}$. The $x-$coordinate of P is 1. **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	0.8	0.98	0.998	1.002	1.02	1.2
slope of secant line	1.078	1.233	1.248	1.252	1.268	1.427

[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.

1.25 1

[c] Using the slope from part (b), find an equation of the tangent line to the curve at P. 1

AT $x=1$, $y=\frac{1}{2}$ $y-\frac{1}{2}=1.25(x-1)$ OR $y=1.25x-0.75$

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

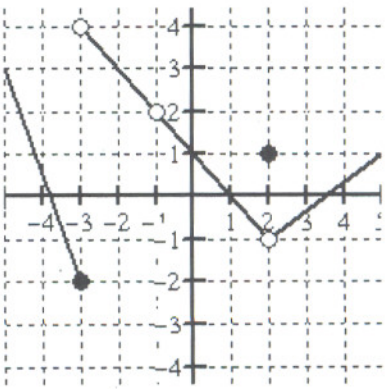
[d] $\lim_{x\to -3^+} f(x) =$ 4

[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