Math 1A (10:30am – 11:20am)
Quiz 1 Version D
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 $\lim_{x\to -4^+} p(x)$, name 3 values of x for which you might want to know the value of $p(x)$. **SCORE: ___ / 2 POINTS**

$-3.9, -3.99, -3.999$

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.

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

$m_2 = \frac{-11--2}{3-1} = -\frac{9}{2}$

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

$\frac{1}{2}\left(-2+-\frac{9}{2}\right) = -\frac{13}{4}$

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

NO. –1 AND 3 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 0.1 second.
Round your answer to 3 decimal places.

$\frac{\sqrt{3.1-2}-\sqrt{3-2}}{3.1-3} = \frac{\sqrt{1.1}-1}{3.1-3} \approx 0.488$

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**

$f(-1)$ exists,

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

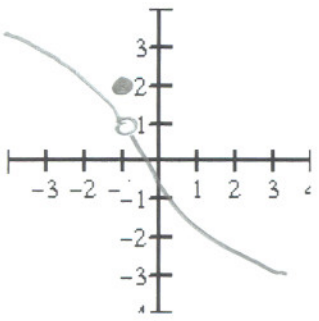
$\lim_{x\to -1} f(x) \neq f(-1)$

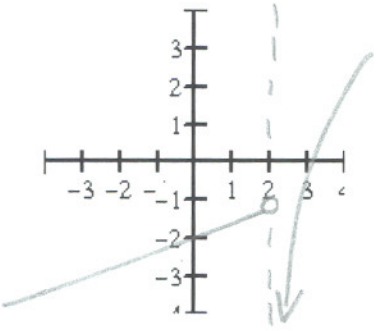
$\lim_{x\to 2^-} g(x) = -1$,

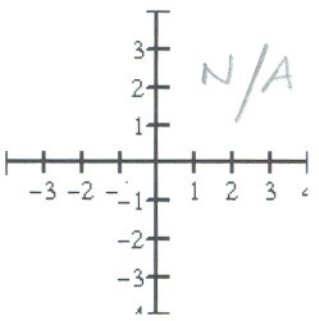
$\lim_{x\to 2^+} g(x) = -\infty$

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

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







The point P lies on the curve $y = \dfrac{x^3}{1+x}$. The $x-$coordinate of P is 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	0.7	0.97	0.997	1.003	1.03	1.3
slope of secant line	0.994	1.224	1.247	1.253	1.276	1.517

[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

OR

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] $f(3) =$ 2

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

[c] $\lim_{x\to 1} f(x) =$ −2

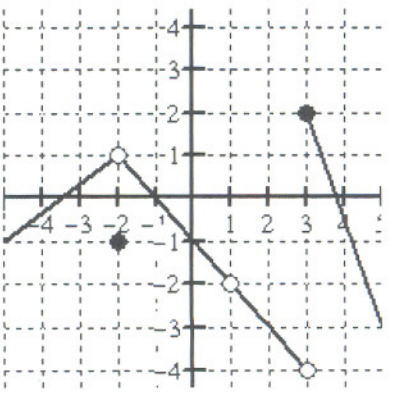
[d] $f(-2) =$ −1

[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