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

What month is your birthday ? 01
What are the first 2 digits of your address ? 15
What are the last 2 digits of your zip code ? 32
What are the last 2 digits of your DeAnza ID number ? 38

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: 0 / 2 POINTS**

X
-5.1
-5.01
-5.001

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

$\frac{-2-(-11)}{1-3} = \frac{9}{-2}$ (½ ½)

$\frac{-9/2+2}{2} = \frac{-9/2+4/2}{2}$ (½ ½)

$\frac{-7-(-11)}{5-3} = \frac{4}{2} = 2$ (½ ½)

$= -\frac{5}{2} \div 2 = -\frac{5}{2} \cdot \frac{1}{2}$

$= \boxed{-\frac{5}{4}}$ or -1.25 (½)

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

½ No, because the values I used for x are far away (2 units) from 3. If I had wanted a more accurate slope, I should've used numbers such as 3.001 or 2.999 for x. 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.

$\frac{s(3+0.1)-s(3)}{(3+0.1)-3} \overset{*}{=} \frac{2.024846-2}{0.1} = \frac{0.024846}{0.1}$

$= \boxed{0.248}$ (1)

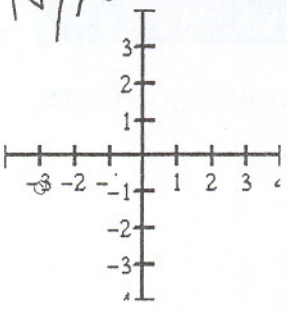
Sketch the graphs of functions that satisfy the following conditions, or write N/A if no such functions exist. **SCORE: 2 / 3 POINTS**

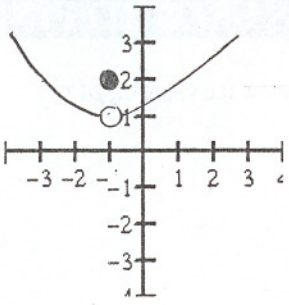
$\lim_{x\to -3^-} f(x) = -1$, $\lim_{x\to -3} f(x) = 1$

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

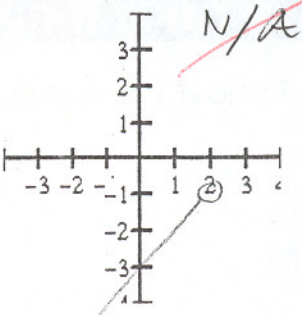
$\lim_{x\to 2^-} h(x) = -1$, $\lim_{x\to 2^+} h(x) = -\infty$

N/A





N/A



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

x	−1.7	−1.97	−1.997	−2.003	−2.03	−2.3
slope of secant line	−5.305	−5.016	−5.002	−4.999	−4.986	−4.939

[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.

slope ≈ -5

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

$-2 = (-5)0 + b$

$-2 = b$

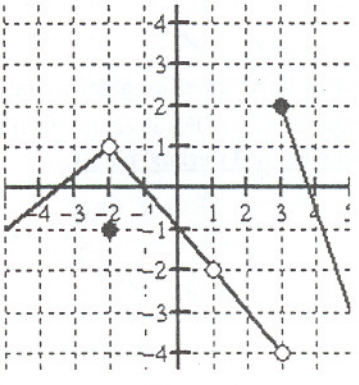
$y = -5x - 2$

OR

$y + 2 = -5x$

FILL IN THE BLANKS. The graph of a function f is shown on the right. **SCORE: 3 / 4 POINTS**

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



[a] $\lim_{x\to 2} f(x) =$ DNE

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

[c] $f(1) =$ DNE ½

[d] $\lim_{x\to 3^-} f(x) =$ −4 ½

[e] $f(-2) =$ −1 ½

[f] $\lim_{x\to 1} f(x) =$ −2 ½

[g] $\lim_{x\to 3} f(x) =$ DNE ½

[h] $f(3) =$ 2 ½