

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?

0 1
 1 6
 8 7
 8 4

SCORE: 12.5 / 20 POINTS

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

To find $\lim_{x \rightarrow -4^+} p(x)$, name 3 values of x for which you might want to know the value of $p(x)$.

SCORE: 2 / 2 POINTS

-3.9
 -3.99
 -3.999

Some values for a function f are given in the table below.

SCORE: 3.5 / 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.

$$a = \frac{-2 - 2}{1 - (-1)} = \frac{-4}{2} = -2$$

slope of $y = f(x)$ at $x = 1 = \frac{1}{2}(-2 - \frac{9}{2})$

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

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

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

My estimate is close to the actual slope of the tangent line. It is close because I calculated its

$$\frac{\Delta y}{\Delta x}$$

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

SCORE: 2 / 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.

$$\frac{s(3.1) - s(3)}{0.1} = \frac{\sqrt{3.1-2} - \sqrt{3-2}}{0.1} = 0.48808$$

$$= 0.488$$



Sketch the graphs of functions that satisfy the following conditions, or write N/A if no such functions exist.

SCORE: 1 / 3 POINTS

$$f(-1) \text{ exists,}$$

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

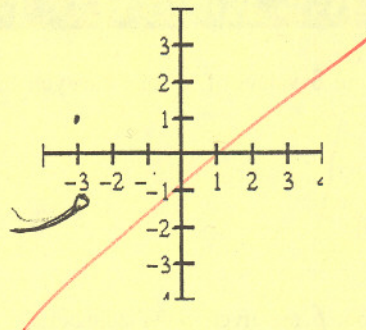
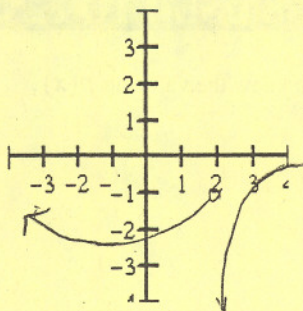
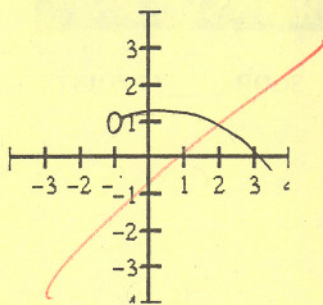
$$\lim_{x \rightarrow -3^-} h(x) = -1,$$

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

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

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

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



The point P lies on the curve $y = \frac{x^3}{1+x}$. The x -coordinate of P is 1.

SCORE: 0 / 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.

x	0.7	0.97	0.997	1.003	1.03	1.3
slope of secant line	-0.288	-0.478	-0.498	-0.502	-0.523	-0.735

- [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 .

The slope of the tangent line to the curve at $P = -\frac{1}{2}$

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

$$(y-0) = -\frac{1}{2}(x-1)$$

$$y = -\frac{1}{2}x + 1$$

FILL IN THE BLANKS. The graph of a function f is shown on the right.

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

SCORE: 4 / 4 POINTS

[a] $f(3) = 2$] $\frac{1}{2}$

[e] $\lim_{x \rightarrow 3^-} f(x) = -4$] $\frac{1}{2}$

[b] $\lim_{x \rightarrow 3} f(x) = \text{DNE}$] $\frac{1}{2}$

[f] $f(1) = \text{DNE}$] $\frac{1}{2}$

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

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

[d] $f(-2) = -1$] $\frac{1}{2}$

[h] $\lim_{x \rightarrow 2} f(x) = -3$] $\frac{1}{2}$

