

SCORE: ___ / 20 POINTS

What day of the month is your birthday? _____

What are the last 2 digits of your address? _____

What are the last 2 digits of your zip code? _____

What are the last 2 digits of your social security number? _____

[IF YOU DO NOT HAVE A SOCIAL SECURITY NUMBER,
USE YOUR STUDENT ID NUMBER]Estimate the slope of $f(x) = \sqrt{x}$ at $x = 3$ to two decimal places by using the method of secant lines discussed in class.Show 6 points you used, and the corresponding slopes. You must use 3 points on each side of $x = 3$.

SCORE: ___ / 4 POINTS

POINT	SLOPE OF SECANT LINE	POINT	SLOPE OF SECANT LINE
(a , $\sqrt{a}$)	$\frac{\sqrt{a}-\sqrt{3}}{a-3}$	(,)	
(,)		(,)	
(,)		(,)	

WHATEVER X-COORDINATE YOU USED (CALL IT a), YOUR SLOPE SHOULD EQUAL $\frac{\sqrt{a}-\sqrt{3}}{a-3}$ ($\frac{1}{2}$ POINT EACH)

ESTIMATED SLOPE OF $f(x) = \sqrt{x}$ AT $x = 3$: 0.29 (1 POINT)

Estimate the length of the curve $f(x) = \frac{1}{x}$ from $x = 2$ to $x = 10$ to two decimal places, using 4 line segments, at equally spaced x -values.

Write down the numerical expression you needed to enter into your calculator.

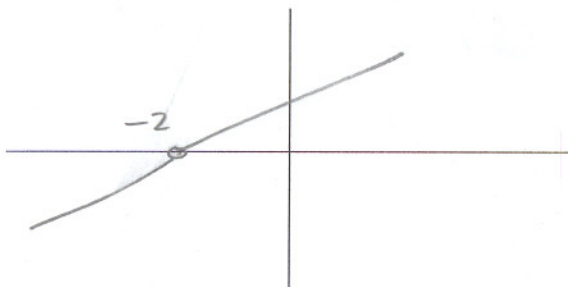
SCORE: ___ / 3 POINTS

(2 POINTS) → NUMERICAL EXPRESSION: $\sqrt{(4-2)^2 + (\frac{1}{4}-\frac{1}{2})^2} + \sqrt{(6-4)^2 + (\frac{1}{6}-\frac{1}{4})^2} + \sqrt{(8-6)^2 + (\frac{1}{8}-\frac{1}{6})^2} + \sqrt{(10-8)^2 + (\frac{1}{10}-\frac{1}{8})^2}$

ESTIMATED LENGTH OF CURVE: 8.02 (1 POINT)

Sketch a function $f(x)$ such that $\lim_{x \rightarrow -2} f(x)$ exists but $f(-2)$ does not exist.

SCORE: ___ / 2 POINTS



(INFINITELY MANY POSSIBILITIES)

Estimate the following limits (to 2 decimal places), if they exist, using either numerical or graphical evidence. If a limit does not exist, write DNE.

SCORE: ___ / 11 POINTS

$$\lim_{x \rightarrow 4} \frac{\sqrt{53-x}-7}{\sqrt{x+5}-3} = -0.43 \text{ (3 POINTS)}$$

$$\lim_{x \rightarrow 4} \frac{\ln(x^2-15)}{x-4} = 8.00 \text{ (3 POINTS)}$$

$$\lim_{x \rightarrow 0} \tan^{-1}\left(\frac{1}{x^2}\right) = 1.57 \text{ (3 POINTS)}$$

$$\lim_{x \rightarrow 0} \tan^{-1}\left(\frac{1}{x}\right) = \text{DNE} \text{ (2 POINTS)}$$