

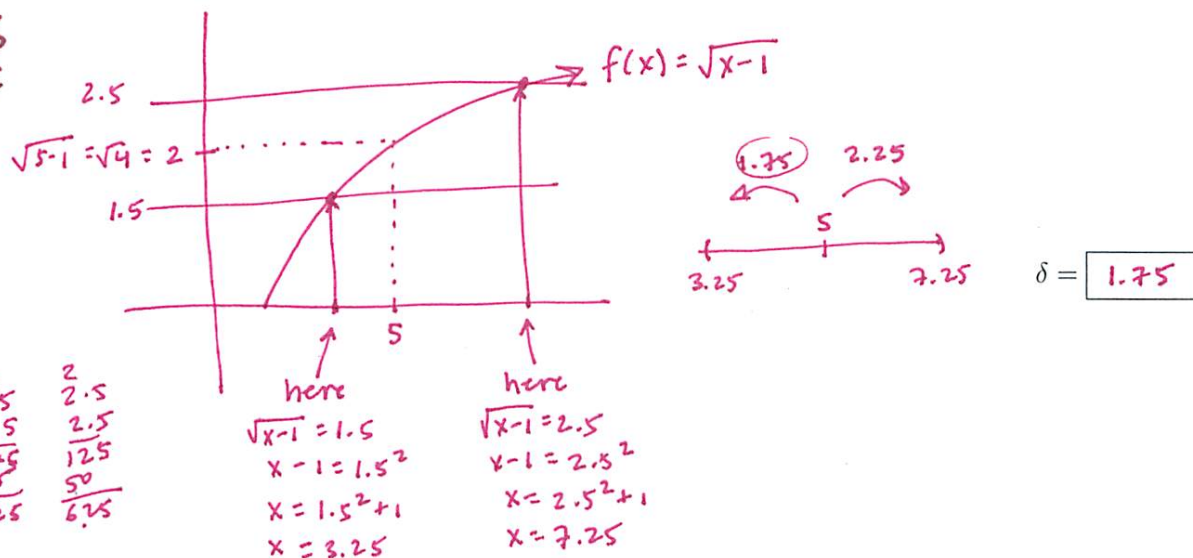
September 3, 2013

You MAY use your hand-written Notebooks but NOT other materials and NOT technology.

1. Approximate the <sup>largest</sup> ~~smallest~~ positive number  $\delta$  such that if  $x \in (5 - \delta, 5) \cup (5, 5 + \delta)$  then  $\sqrt{x-1} \in (1.5, 2.5)$ . Show your work very clearly so that I can see how you arrived at your final answer, and write your final answer in the box. Your work MUST include a labeled graph. (like #45 in 1.2)

Hint: This problem is about the limit statement  $\lim_{x \rightarrow 5} \sqrt{x-1} = 2$  with  $\epsilon = 0.5$ .

10 pts



$\begin{array}{r} 2 \\ 1.5 \\ \hline 0.5 \\ 1.5 \\ \hline 3 \\ 1.5 \\ \hline 4.5 \end{array}$   
 $\begin{array}{r} 2 \\ 2.5 \\ \hline 0.5 \\ 2.5 \\ \hline 3 \\ 5 \\ \hline 8 \end{array}$

2. Write each of the following as an absolute value inequality:

4 pts

$x \in (5 - \delta, 5) \cup (5, 5 + \delta)$  your answer:  $0 < |x-5| < \delta$

$\sqrt{x-1} \in (1.5, 2.5)$  your answer:  $|\sqrt{x-1} - 2| < 0.5$

3. Bonus: What is one question that could have been on this quiz, but wasn't?

you said: infinite limits (M/S, E/N, M/N)

1 pt