

Math 1A Quiz 1

January 31st, 2008

Name _____ SID _____

Let $f(x)$ be the function:

$$f(x) = \begin{cases} \sin x & , \quad x < \frac{\pi}{2} \\ 3 & , \quad x = \frac{\pi}{2} \\ x - \frac{\pi}{2} + 1 & , \quad x > \frac{\pi}{2} \end{cases}$$

a) Graph this function.

b) Does $\lim_{x \rightarrow \frac{\pi}{2}} f(x)$ exist? If so, what is the value of this limit? If not, explain why not. (You don't need to prove it!)

c) Find a $\delta > 0$ so that whenever $0 < |x - \frac{\pi}{2}| < \delta$, we get $|f(x) - 1| < \frac{1}{2}$.
[Hint: find a δ for each side of $\frac{\pi}{2}$, then take the smaller one.]