MATH 101
QUIZ 1A

Name: **Serial No.** **section:**

1. Evaluate the limit if it exist. If the limit does not exist explain why?

   (a) $\lim_{t\to 0}\left\{\dfrac{1}{t}-\dfrac{5}{t\sqrt{25+t}}\right\}$

   (b) $\lim\limits_{x\to-\infty}\dfrac{x\sqrt{x^2+3}}{1+x^2}$

   (c) $\lim\limits_{x\to 1^+}\left\{\ln(x-1)-\ln(\sqrt{x}-1)\right\}$

   (d) $\lim\limits_{x\to -2/3}\dfrac{3x+2}{|6x+4|}$

2. For $f(x)=\sqrt{x}$ find δ such that $|x-2|<0.4$ whenver $|x-4|<\delta$..

3. Evaluate $\lim_{x \to 0^+} \arctan\left(\frac{x+\sqrt{x}}{\sqrt{x}}\right)$

4. Show that there is a zero of the equation $x^3 - 2x + 3 = 0$ between -2 and -1. (What is the name of the Theorem you used here?)

5. Find the numbers at which the following function is discontinuous and classify the type of discontinuity

$$f(x) = \begin{cases} x+4 & x \leq 2 \\ \frac{2x-10}{x-4} & 2 < x < 4 \\ \frac{9}{x} & x \geq 4 \end{cases}$$