King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math 101 Section 21 Quiz II (Term 161)

Name : ..... **ID** #..... Serial #: .....

1. Where is $f(x) = \dfrac{\sqrt{x+1}}{x^2+x-2}$ continuous

2. For what values of a and b is

$$f(x) = \begin{cases} ax - 2b & x \leq 0 \\ x^2 + 3a - b & 0 < x \leq 2 \\ 3x - 5 & x > 2 \end{cases}$$

continuous at every x?

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3. Use the Intermediate Value Theorem to show that the equation $x^2 - \cos(\pi\, x) = 4$ has a solution between 2 and 3.

4. Use the graph of $f(x) = x^2 + 1$ to find the largest number $\delta > 0$ such that for all x,

$$0 < |x - 1| < \delta \Rightarrow |f(x) - 2| < \frac{1}{4}$$

(Note that $\sqrt{2} \approx 1.41$, $\sqrt{3} \approx 1.73$, $\sqrt{5} \approx 2.24$, $\sqrt{7} \approx 2.65$]