King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math 101 Section 19 Quiz II (Term 151)

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

1. Where is the function $f(x) = \dfrac{\ln x + \tan^{-1} x}{x^2 - 1}$ continuous?

2. Use the graph of $f(x) = \dfrac{1}{x}$ to find the largest number $\delta > 0$ such that for all x, $0 < |x - 2| < \delta \Rightarrow \left|f(x) - \frac{1}{2}\right| < \dfrac{1}{8}$.

3. For what values of a and b is

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

continuous at every x?

4. Use the Intermediate Value Theorem to prove that the equation $\cos x = x$ has a solution on the interval $\left[0, \frac{\pi}{2}\right]$.