

Your Name:

Duration of the Quiz is 20 minutes. There are two problems, worth 20 points. Show all your work for full credit. Books, notes etc. are prohibited. Calculators are NOT permitted.

1. Where is the function

$$f(x) = \begin{cases} 2^x & \text{if } x \leq 1 \\ 3 - x & \text{if } 1 < x \leq 4 \\ \sqrt{x} & \text{if } x > 4 \end{cases}$$

continuous? You must write a complete answer.

2. Use the Intermediate Value Theorem to show that there is a root of the equation

$$e^x = 3 - 2x$$

between 0 and 1. You must write a complete answer. **Hint:** $e \approx 2.71$.