Math 1A 108 DIS Quiz 4 26 Sept 2018

Name: _____ Score: _____

1. Find the points of continuity of the following functions. (1 point each)

   (a) $f(x) = \log x$

   (b) $f(x) = \begin{cases} x, & x \leq 0 \\ 1, & x > 0 \end{cases}$

   (c) $f(x) = \begin{cases} \frac{1}{x-1}, & x \leq 0 \\ \frac{2}{x-1}, & x > 0 \end{cases}$

   (d) $f(x) = \begin{cases} x^3, & x \leq -1 \\ |x|, & -1 < x < 1 \\ \cos x, & x \geq 1 \end{cases}$

2. Using the Intermediate Value Theorem, show that $2\sin x = x$ has a solution in $(\frac{\pi}{2}, \pi)$. (2 points)

3. Find $f'(x_0)$ according to the definition of derivative at a point, for each of the following. (2 points each)

   (a) $f(x) = x^2 - 1$, $x_0 = 1$

   (b) $f(x) = \sqrt{x}$, $x_0 = 1$