

Name _____

Section A, C, D 10

MA 104, Quiz #1

23 January 2008

Instructions: You have 15 minutes to complete this quiz. The quiz is worth 15 points. You are allowed to use the basic issued calculator for this quiz. Show all work for full credit. Good luck!

1. Determine if the sequence $a_n = \cos\left(\frac{2}{n}\right)$ converges or diverges. If converges, find the limit.

2. Given the graph of $g(x)$.

(a) $\lim_{x \rightarrow -3} g(x)$

(b) $\lim_{x \rightarrow -1} g(x)$

(c) $\lim_{x \rightarrow 3} g(x)$

- (d) Give one x-value for each type of discontinuity appearing in $g(x)$

3. Find the numbers at which f is discontinuous.

$$f(x) = \begin{cases} 1 + x^2 & \text{if } x \leq 0 \\ 2 - x & \text{if } 0 < x \leq 2 \\ (x - 2)^2 & \text{if } x > 2 \end{cases}$$

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

$$\cos x - x$$

on the interval $(0, 1)$.