Math 2143 - Brief Calculus with Applications

Homework #4 - 2008.02.07

Due Date - 2008.02.14

Name: _____

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1. Find that value of a such that $f(x)$ defined below is continuous on $\mathbb{R}$.

$$f(x) = \begin{cases} x+3, & x < -1 \\ x^2 + ax - 2, & x \geq -1 \end{cases}$$

2. Compute the following limits:

a) $\lim_{x \to -5} \frac{x^2-3x-10}{x-5}$

b) $\lim_{x \to 5} \frac{x^2-3x-10}{x-5}$

c) $\lim_{x \to 5^+} \frac{x^2-3x-10}{|x-5|}$

d) $\lim_{x \to 5^-} \frac{x^2-3x-10}{|x-5|}$

e) $\lim_{x \to 5} \frac{x^2-3x-10}{|x-5|}$

3. Determine the intervals over which the following functions are continuous.

a) $f(x) = \begin{cases} \frac{x^2-3x-4}{x-4}, & x \neq 4 \\ 2, & x = 4 \end{cases}$

b) $g(x) = \begin{cases} \frac{x^2-3x}{x}, & x \neq 0 \\ -3, & x = 0 \end{cases}$