

Group Exam 2

Name: _____

Math 141, 11:30AM

Name of group member: _____

Professor Johnson

Name of group member: _____

Problem 1: Evaluate the following limits.

(a) $\lim_{x \rightarrow 0} \frac{\sqrt{3+x} - \sqrt{3}}{x}$

(b) $\lim_{t \rightarrow 0} \frac{(w+t)^2 - w^2}{t}$

where w is an arbitrary real number.

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Problem 2: Find the positive number c which makes the function $f(x)$ continuous at $x = 1$.

$$f(x) = \begin{cases} -4x^2 + c & x \leq 1 \\ \frac{5x + 1}{x^4 + c} & x > 1 \end{cases}$$

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Problem 3: (a) Determine the interval(s) over which the function $g(x) = \ln(x^2 - 7x + 10)$ is continuous.

(b) Note: This problem has nothing to do with part (a) above.

Draw the graph of a function $h(x)$ which satisfies the following five conditions.

(i) $\lim_{x \rightarrow 0^+} h(x)$ does not exist

(iv) $\lim_{x \rightarrow 5} h(x) = 0$

(ii) $h(0) = 4$

(v) $\lim_{x \rightarrow 0^-} h(x) = 10$

(iii) $h(x)$ is continuous for all real numbers except $x = 0$ and $x = 5$ and $x = 10$.

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