Loyola University Chicago
Math 161, Section 001, Fall 2010

Quiz 2

Name (print): _____ **Signature:** _____

You have 30 minutes. Show your work. Notes not allowed! Problems are on both sides of this sheet.

Problem 1. (10 pts) Find the following limits:

a. $\lim_{x\to 5} 11x + e^{x-4} + \dfrac{x}{x+1}$

b. $\lim_{x\to 3^+} \dfrac{x-5}{x-3}$

c. $\lim_{x\to 0} \dfrac{\tan 4x}{x}$ *(You can use the fact that* $\lim_{x\to 0} \dfrac{\sin x}{x} = 1$*)*

d. $\lim_{x\to 7} \dfrac{\sqrt{x+2}-3}{x-7}$

e. $\lim_{h\to 0} \dfrac{\frac{7}{x+h} - \frac{7}{x}}{h}$

Problem 2. (5 pts) Find the horizontal and the vertical asymptote(s), if any exist, for the function

$$f(x) = \frac{x^2 + x - 12}{x^2 + 6x + 8}$$

Problem 3. (5 pts) For what values of a and b is the following function continuous?

$$f(x) = \begin{cases} 3x + a & \text{if} \quad x < 2 \\ 7 & \text{if} \quad x = 2 \\ bx^2 - 9 & \text{if} \quad x > 2 \end{cases}$$