Take-Home Quiz 2

Math 131 Section 22

Due Monday, October 17, 2005

You may use any resource (books, notes, even people), but you must write down your solutions when you are alone. Anytime that you are asked to evaluate a limit, you must justify your calculation.

Problem 1. (1 point). Give the official definition of

$$\lim_{x\to\infty} f(x) = L.$$

Problem 2. (2 points). Prove that

$$\lim_{x\to\infty} 1/x = 0.$$

Problem 3. (1 point). Evaluate

$$\lim_{x\to 2^+} \left(\frac{3x^2 - 2x + 2}{\lfloor x\rfloor^2 + 1}\right)^4.$$

Problem 4. (2 points). Evaluate

$$\lim_{x\to 17^-} \lfloor x\rfloor + \lfloor -x\rfloor.$$

Problem 5. (2 points). Evaluate

$$\lim_{x\to\infty} \frac{x^2}{x-1} - \frac{x^2}{x+1}.$$

Problem 6. (2 points). Evaluate

$$\lim_{x\to 3^+} \frac{x^2 - x - 12}{x^2 - 8x + 15}.$$

Problem 7. (2 points). Evaluate

$$\lim_{x\to\infty} \frac{\sqrt[3]{2x^3 + x + 1}}{\sqrt{x^2+1}}.$$