MATH 153 **Quiz 1** **January 19, 2006**

NAME: _____

(1) Evaluate $\lim_{x\to\infty} -3x^5 + 6x^2 - 7$

(2) Find a value of k so that $\lim_{x\to\infty} \dfrac{3x^4 + 7x - 7}{kx^4 - 11} = \dfrac{1}{2}$.

(3) Find a value of k so that $\lim_{x\to-\infty} \dfrac{-3x^4 + 7x - 7}{5x^k - 11} = \infty$.

(4) Consider the piecewise function f, defined by

$$f(x) = \begin{cases} \frac{1}{x} & \text{if } x < 0, \\ 2 & \text{if } 0 \le x < 2, \\ 3 & \text{if } x = 2, \\ (2x - 2) & \text{if } x > 2. \end{cases}$$

(a) NEATLY sketch the graph of f.

(b) Evaluate the following limits. If a limit does not exist, write "DNE".

(i) $\lim_{x\to-\infty} f(x) =$

(ii) $\lim_{x\to 0} f(x) =$

(iii) $\lim_{x\to 2} f(x) =$

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

(v) $\lim_{x\to 1} f(x) =$

(vi) $\lim_{x\to 3} f(x) =$