Loyola University Chicago
Math 161, Section 001, Fall 2010

Sample Quiz 4

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

You have 30 minutes. Show your work. Notes, calculators not allowed! Problems are on both pages.

Problem 1. (6 pts) Find the limits:

$\lim_{x\to\infty} x^{74}2^{-.4x}$

$\lim_{z\to 2^+} \dfrac{z^2-4}{\ln(z-2)}$

$\lim_{x\to 0} \dfrac{1}{x} - \dfrac{\tan x}{x^2}$

Problem 2. (5 pts) Find the interval/intervals where the function $f(x) = x^5(x-2)^4$ is increasing and where it is decreasing.

Problem 3. (2 pts) Find the limit:

$$\lim_{x\to\infty} \frac{\ln(\ln x)}{e^{\sqrt{x}}}$$

Problem 4. (7 pts) Find the volume of the largest cylinder that can be inscribed in a circle of radius 7.