Loyola University Chicago
Math 201, Section 001, Fall 2009

Quiz 6 Sample

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

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

Problem 1. Is the number $3.2457457457457\ldots$ rational or not? If yes, write it as a fraction. If not, give reasons.

Problem 2. Prove that $\sqrt[4]{6}$ is not a rational number.

Problem 3. Write down an explicit formula for a bijection from $\mathbb{Z}$ to $\mathbb{N}$.

Problem 4. Suppose that the coefficients a, b, c of the quadratic equation $ax^2 + bx + c = 0$ are rational and that the equation has two distinct solutions. How many of these solutions can be rational? Give all necessary examples and proofs.