Name:

Choose **one** of the following two problems:

1. Prove the following statement: For all nonzero real numbers x and y, if x is a rational number and y is an irrational number, then $\dfrac{x}{y}$ is an irrational number.

2. Prove the following statement: For all real numbers x, either $x+\sqrt{2}$ is irrational, or $-x+\sqrt{2}$ is irrational.