

**Quiz 1**  
Econ 501

You must show your work.

Name \_\_\_\_\_

1. Define strict monotonicity. Explain the impact that this assumption has on the construction of preference sets (and hence on indifference curves).

2. Let the preference relation be represented by  $u : \mathbb{R}_+ \rightarrow \mathbb{R}$ . Prove that if the preference relation is strictly convex,  $u(\mathbf{x})$  is strictly quasiconcave.

3. (a) Write down the basic mathematical problem from which the marshallian demand curve is derived.

(b) Graphically derive a marshallian demand curve for a price increase in  $x_1$ . Make sure to label.