Name:

Problem 1 (2 points)**.** Define a *group* $(G, \cdot)$.

Problem 2 (4 points)**.** Let G be a group, and $g \in G$ be an element of order t. Show that if $t = ab$ for some positive integers a, b, then the order of g^a is b.

Problem 3 (4 points)**.** Let G be a finite group of order n (i.e., G has n distinct elements), and let $g \in G$. Show that the order of g is less than or equal to n.

Problem 4 (Bonus)**.** Let g be an element of a group G, and suppose that g has order n. Give a formula for the order of g^a in terms of a and n.