

MTH 4441 HW Groups and Abelian Groups

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Name _____

1. Part of the multiplication group table for the group $G = \{a, b, c, d\}$ is given. Complete the table.

\times	a	b	c	d
a		d		
b				
c			c	
d				c

2. Part of the multiplication group table for the group $G = \{a, b, c, d\}$ is given. Complete the table.

\times	a	b	c	d
a				
b		a		
c	a			
d				

3. Prove that if $x = x^{-1}$ for all x in the group G , then G is abelian. (i.e., the binary operator is commutative.)
4. Suppose that $ab = ca$ implies that $b = c$ for all elements a, b , and c in a group G . Prove that G is abelian.
5. Let a, b be elements of a group G . Prove that G is abelian if and only if $(ab)^{-1} = a^{-1}b^{-1}$.
6. Let a, b be elements of a group G . Prove that G is abelian if and only if $(ab)^2 = a^2b^2$.