Chapter 5

2. Proof: As $ab = a$, we have $q(a)ab = q(a)b$. Thus $1b = 1$ and hence, $b = 1$. 

3. Proof: As $ab = 1$, $(ab)q(a) = 1q(a) = q(a)$. On the other hand,

\[(ab)q(a) = (ba)q(a) = b(aq(a)) = b1 = b.\]

Hence $b = q(a)$. 

7. Proof: As $1 + n(1) = 0$,

\[n(1)(1 + n(1)) = n(1) \cdot 0 = 0.\]

Thus

\[n(1) + n(1) \cdot n(1) = 0.\]

This implies $n(1) \cdot n(1) = 1$. 

8. Proof: As $ab = ac$, $q(a)(ab) = q(a)(ac)$. Thus $(q(a)a)b = (q(a)a)c$. This implies $b = c$. 

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