

THE INVERSE OF ab – ANSWER

Theorem: Let G be a group, and let $a, b \in G$. Then $(ab)^{-1} = b^{-1}a^{-1}$.

Proof: Let G be a group, and let $a, b \in G$. Then $(ab)^{-1}(ab) = e$, the identity. But on the other hand, $(b^{-1}a^{-1})(ab) = b^{-1}(a^{-1}a)b = b^{-1}eb = b^{-1}b = e$. Hence, $(ab)^{-1}(ab) = (b^{-1}a^{-1})(ab)$, and by the Left Cancellation Theorem, it follows that $(ab)^{-1} = b^{-1}a^{-1}$.

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