

Yahoo Answer dated 02-09-2013

Question: If $2^x = 3^y$ and $x + y = 1$, prove that $x = \frac{\log 3}{\log 6}$.

Solution: $x + y = 1 \implies y = 1 - x$.

Therefore $2^x = 3^{1-x} = 3 \cdot 3^{-x} \implies 6^x = 3$.

Hence $x = \log_6(3) = \frac{\log 3}{\log 6}$.