

Inverse of Exponential

Proof

$$b^{\log_b x} = x$$

<u>Statements</u>	<u>Reasons</u>
1. $y = b^x = f(x)$	Given
2. $x = b^y$	Interchange x and y
3. $y' = \log_b x = g(x)$	Def of log
4. $f(g(x)) = b^{\log_b x}$	Composition of fcts.
5. Let $b^{\log_b x} = n = b^t$	Substitution
6. $\log_b x = t$	Bases =, exponents =
7. $\therefore b^t = x$	Def of log
8. $b^{\log_b x} = x$	Substitution (5)