Finding Inverses of Exponentials

1.) Find the inverse of $y = 4^x$

switch x and y

write as log

"Log it off"

$x = 4^y$

$\log_4 x = \log_4 4^y$

$\log_4 x = y$

2.) Find the inverse of $y = 8^x$

switch x and y

write as log

"Log it off"

$x = 8^y$

$\log_8 x = \log_8 8^y$

$\log_8 x = y$

3.) Find the inverse of $y = 3 + 2^x$

switch x and y

isolate exponential term

write as log

"Log it off"

solve for y

$x = 3 + 2^y$

$x - 3 = 2^y$

$\log_2 (x-3) \log_2 2^y$

$\log_2 (x-3) = y$

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1) Find the inverse of $y = \log_7 x$

switch x and y

$x = \log_7 y$

write as exponent

$7^x = 7^{\log_7 y}$

"Exponentiate"

$7^x = y$

2) Find the inverse of $y = \log(x - 2)$

switch x and y

$x = \log(y - 2)$

common log, base 10

write as exponent

$10^x = 10^{\log(y-2)}$

"Exponentiate"

$10^x = y - 2$

solve for y

$10^x + 2 = y$

3) Find the inverse of $y = 5 + \log x$

switch x and y

$x = 5 + \log y$

isolate log term

$x - 5 = \log y$

write as exponent

$10^{x-5} = 10^{\log y}$

solve for y

$10^{x-5} = y$