Logarithmic Functions as Inverses

- Definition of **Logarithm**: If $y = b^x$ then _____

Read as "log base b of y"

A logarithmic function is the inverse of an exponential function.

Example 1: Solve.

a. $\log_3 x = 2$

b. $\log_4 x = 3$

c. $\log_5 25 = x$

d. $\log_4 256 = y$

e. $\log_9 x = \frac{3}{2}$

f. $\log_7 \left(\frac{1}{49} \right) = y$

g. $\log_{\left(\frac{1}{3}\right)} 27 = y$

h. $\log_6 \sqrt{6} = y$

A common logarithm used _____ _____.

So $\log_{10} x$ = _____.

Example 2: Evaluate.

a. $\log 100$

b. $\log 6$

c. $\log_6 216$

d. $\log_7 343$

e. $\log_2\left(\frac{1}{128}\right)$

f. $\log_9 27$

g. $\log_{64}\left(\frac{1}{32}\right)$

Example 3: Write each in logarithm form.

a. $2^6 = 64$

b. $7^4 = 2401$

c. $8^{\frac{1}{3}} = 2$

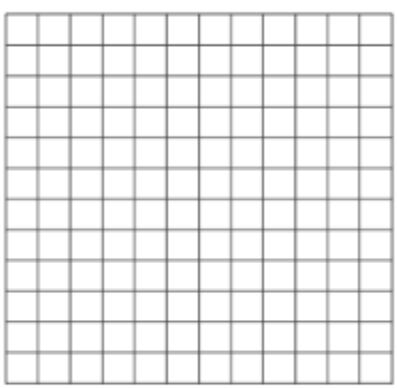
d. $3^{-2} = \frac{1}{9}$

Find the inverse of:

$y = \log (x - 2)$

Example 4: Graph the exponential and its inverse.

a. $y = 2^x$



Domain:

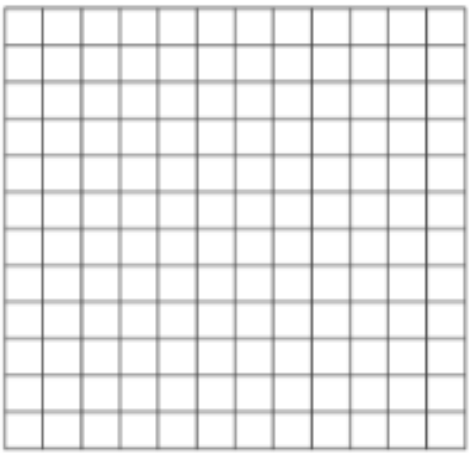
Range:

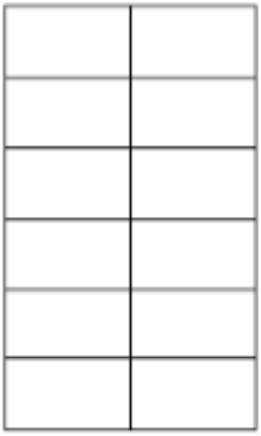
H.A.

Graph exponential form.

Get points for that problem.
Find inverse of the exp. form.
(switch x & y and get y by inself)
Switch x & y values to get pts. for log prob.

b. $y = \log_2 x$





Domain:

Range:

V.A.