



December 4

How are exponential functions
related to log functions?



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Students will verbally explain how to
graph and simplify logarithmic
function

(using the words:
product, sum, power...)

Properties for simplifying exponential expressions

$$b^x \cdot b^y = b^{x+y}$$

$$b^{-x} = \frac{1}{b^x}$$

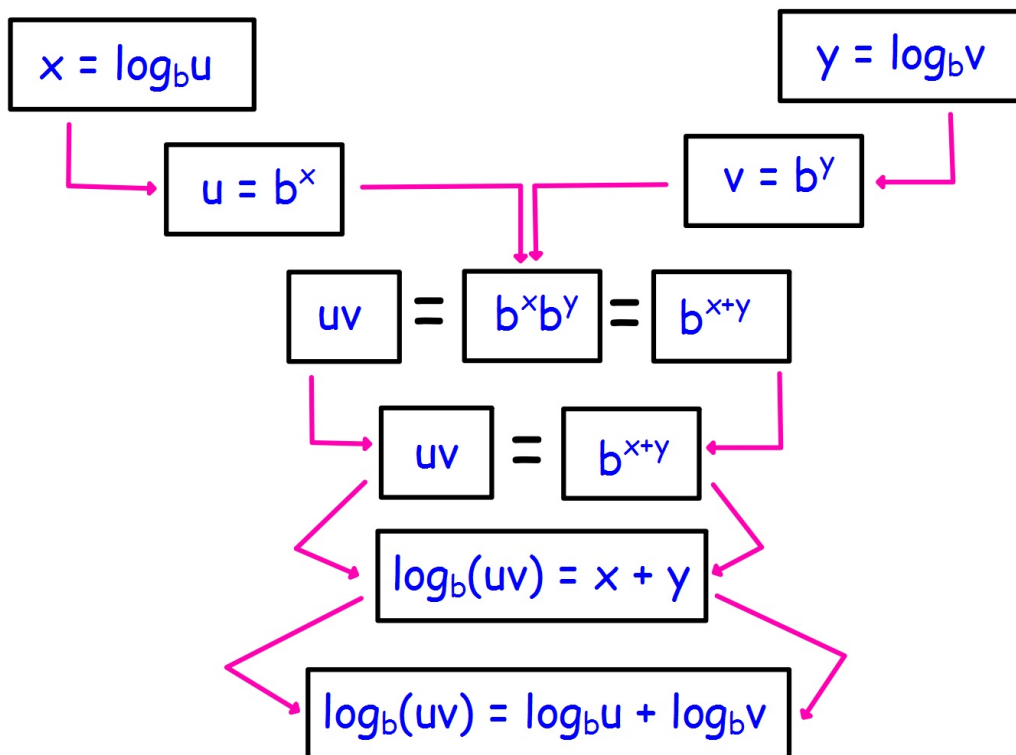
$$(b^x)^y = b^{xy}$$

$$b^0 = 1$$

$$\frac{b^x}{b^y} = b^{x-y}$$

$$(ab)^x = a^x b^x$$

$$\left(\frac{a}{b}\right)^x = \frac{a^x}{b^x}$$



Log Properties

$$\ln(xy) = \ln(x) + \ln(y)$$

$$\ln\left(\frac{x}{y}\right) = \ln(x) - \ln(y)$$

$$\ln(x^y) = y \cdot \ln(x)$$

$$\ln(1) = 0$$

Rewrite
 $\ln\left(\frac{x^7}{y}\right)$

$$= \ln(x^7) - \ln(y)$$

$$7\ln(x) - \ln(y)$$

$$\ln\left(\left[\frac{x-2}{3y}\right]^5\right)$$

$$= 5\ln\left(\frac{x-2}{3y}\right)$$

$$= 5(\ln(x-2) - \ln(3y))$$

$$= 5\ln(x-2) - 5\ln(3y)$$

$$\ln(\sqrt[6]{a^4c})$$

$$= \ln((a^4c)^{1/6})$$

$$\sqrt[n]{x} = x^{1/n}$$

$$= \frac{1}{6} \ln(a^4c)$$

$$= \frac{1}{6} \ln(a^4) + \frac{1}{6} \ln(c)$$

$$= 4\left(\frac{1}{6} \ln(a)\right) + \frac{1}{6} \ln(c)$$

$$= \frac{4}{6} \ln(a) + \frac{1}{6} \ln(c)$$

$$= \frac{2}{3} \ln(a) + \frac{1}{6} \ln(c)$$

pg 375 #1 - 39 odd

Pg 383 #25-35, 41, 49 - 59

(Odds only for all parts)

pg 227 # 1 - 10 AND

Pick one:

#11 - 31 (odd)

OR

#11 - 44 (every 3rd problem)

pg 247 # 21 - 30

Pg 257 # 19 - 22, 29 - 34,
53 - 56, 61 - 80