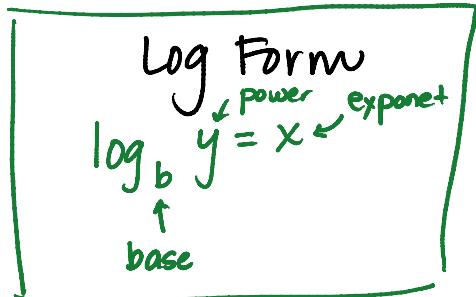
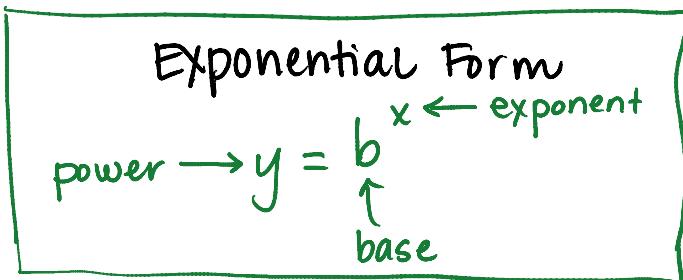


6.13 Day 2

Always remember...

LOGS are E X P O N E N T S !!!



① Convert from exponential to log form:

a) $m = n^p$

$$\log_n m = p$$

b) $k = j^h$

$$\log_j k = h$$

c) $32 = 2^5$

$$\log_2 32 = 5$$

② Convert from log to exponential form.

a) $\log_2 8 = x$

$$8 = 2^x$$

b) $\log_5 125 = x$

$$125 = 5^x$$

c) $\log_3 (\frac{1}{9}) = x$

$$3^x = \frac{1}{9}$$

③ Simplify. Evaluate when possible.

a) $\log_3 9 + \log_3 27$

$$\begin{matrix} 2 & + 3 \\ \textcircled{5} & \end{matrix}$$

b) $\log_2 8 - \log_2 4$

$$\begin{matrix} 3-2 \\ \textcircled{1} \end{matrix}$$

$$c) \log_5 25 + \log_5 5$$

$$\begin{matrix} 2+1 \\ \textcircled{3} \end{matrix}$$

$$d) \log_2 64 - \log_2 8$$

$$\begin{matrix} 6-3 \\ \textcircled{3} \end{matrix}$$

You Try!

$$e) \log_2 8 + \log_4 16 - \log_2 16$$

$$\begin{matrix} 3 & + & 2 & - 4 \\ & & & \textcircled{1} \end{matrix}$$

$$f) \log_3 81 - \log_3 27 - \log_3 3$$

$$\begin{matrix} 4 & - 3 & - 1 \\ & & \textcircled{0} \end{matrix}$$

$$g) 2 \log_5 625 + \log_{865} 1$$

$$\begin{matrix} 2(4) & + 0 \\ 8 & + 0 \\ & \textcircled{8} \end{matrix}$$

$$h) -\frac{1}{2} \log_5 25 + \frac{1}{3} \log_{10} 1000$$

$$\begin{array}{r} -\frac{1}{2}(2) + \frac{1}{3}(3) \\ -1 + 1 \\ \textcircled{0} \end{array}$$

i) $\frac{1}{2} \log_5 5 + \log_5 \sqrt[4]{5}$

$$\frac{1}{2}(1) + \log_5 5^{1/4} = x$$

$$\frac{1}{2} + \frac{1}{4}$$

$$\frac{3}{4}$$

④ Solve for x.

a) $\log_2 x = 4$

$$2^4 = x$$

$$16 = x$$

b) $\log_5 x = 3$

$$5^3 = x$$

$$125 = x$$

⑤ Approximate the solutions to the following equations:

a) $5^x = 27$

x is between 2 and 3 but is closer to 2

b) $3^x = 42$

$$3 < x < 4$$

c) $10^x = 300$

$$2 < x < 3$$

d) $\log_2 17 = x$

e) $\log_2 \frac{1}{5} = x$

$$d) \log_2 17 = x$$

$$2^x = 17$$

$$4 < x < 5$$

$$e) \log_2 \frac{1}{5} = x$$

$$2^x = \frac{1}{5}$$

$$-3 < x < -2$$

$$f) \log_4 57 = x$$

⑥ Find the exact solutions to the following equations using your calculator. Round to the nearest hundredth.

$$a) \frac{3 \cdot 4^{x-2}}{3} = \frac{18}{3}$$

$$\underbrace{4^{x-2}}_{y_1} = \underbrace{6}_{y_2}$$

Find intersection:
2nd Trace
#5 Intersection

$$x \approx 3.29$$

$$b) 2^x - 6 = 3x + 5$$

$$x \approx 4.63$$

$$x \approx -3.64$$

$$c) 8x = 7 \log_{10} 3$$

$$d) -\frac{2}{5}x = 6 - \log 19$$

$$e) \log 10,000 = -x$$