The Change-of-Base Formula

… change any log expression to a base 10 or base e so you can use your calculator!

1

Change of Base Formula

Let *a*, and *b* be positive numbers with $b \neq 1$.

$$\log_b a = \frac{\log a}{\log b} \qquad \log_b a = \frac{\ln a}{\ln b}$$

$$\log_b a = \frac{\log_c a}{\log_c b}$$

2

Evaluate each using common or natural logarithms.

a. $\log_2 8 = 3$

$$= \frac{\log 8}{\log 2}$$

b. $\log_4 8 = 1.5$

$$= \frac{\log 8}{\log 4}$$

c. $\log_3 25 = 2.93$

$$= \frac{\log 25}{\log 3}$$

3