

Sec4.3

Change-of-Base Formula

Change of Base Formula

For any base $a > 0$ and $a \neq 1$

$$\log_b x = \frac{\log_a x}{\log_a b}$$

or

$$\log_b x = \frac{\log x}{\log b} = \frac{\ln x}{\ln b}$$

Use common or natural logs and a calculator to evaluate-

$$\log_5 140$$

$$\log_7 2506$$

$$\log_5 140 \quad * \text{use ln}$$

$$\frac{\log 140}{\log 5}$$

$$\approx 3.07$$

$$\frac{\log 2506}{\log 7}$$

$$\approx 4.02$$

$$\frac{\ln 140}{\ln 5}$$

$$\approx 3.07$$

Suggested Practice

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71, 73, 75, 77 → 3.6193

1.5937

-1.2309

1.6944