

Log Properties (Expand, Evaluate)

UNIT 8 LESSON _____ INVESTIGATION _____ NOTES

Lesson Vocabulary

Expand Logs - Starting with a single log, write it in expand form (multiple logs) using the log properties.

Evaluate a log expression

1. Use properties to write as a single log.
2. Use COB

Example Problem(s)

ex.) Expand each log.

a) $\log_5 \frac{x}{y}$

$\log_5 x - \log_5 y$

b) $\log 3r^4$

$\log 3 + \log r^4$

$\log 3 + 4 \log r$

c) $\log_7 a^3 b^4$

$\log_7 a^3 + \log_7 b^4$

$3 \log_7 a + 4 \log_7 b$

d) $\log \left(\frac{y}{3}\right)^2$

$2 \log \frac{y}{3}$

$2(\log y - \log 3)$

$2 \log y - 2 \log 3$

$\log \left(\frac{y}{3}\right)^2$

OR $\log y^2 - \log 3^2$

$2 \log y - 2 \log 3$

ex.) Evaluate.

a) $\log_2 4 - \log_2 16$

$\log_2 \frac{4}{16}$

$\frac{\log \frac{4}{16}}{\log 2}$

-2

b) $\log_6 4 + \log_6 9$

$\log_6 36$

$\frac{\log 36}{\log 6}$

2

c) $4 \log_4 2 - 2 \log_4 8$

$\log_4 2^4 - \log_4 8^2$

$\log_4 16 - \log_4 64$

$\log_4 \frac{16}{64}$

$\frac{\log \frac{16}{64}}{\log 4}$

d) $2(\log 6 + \log 3) - \log 12$

$2 \log 18 - \log 12$

$\log 18^2 - \log 12$

$\log 324 - \log 12$

$\log \frac{324}{12}$

$\log 27$

1.43