

## 3.3 Properties of Logarithms (day 2)

**Extra Practice: pg. 185 (19-57) odd**

Complete the following exercises on your own paper:

**Evaluate each logarithm.**

**19.**  $\log_5 \sqrt[4]{25}$

**21.**  $9 \ln e^3 + 4 \ln e^5$

**23.**  $2 \log_3 \sqrt{27}$

**25.**  $4 \log_2 \sqrt{8}$

**27.**  $\log_3 \sqrt[6]{243}$

### 3.3 Properties of Logs (Extra Practice).notebook

Expand each expression.

29.  $\log_9 6x^3y^5z$

31.  $\log_3 \frac{p^2q}{\sqrt[5]{3q-1}}$

33.  $\log_{11} ab^{-4}c^{12}d^7$

35.  $\log_4 10t^2uv^{-3}$

37.  $\ln \frac{3a^4b^7c}{\sqrt[4]{b-9}}$

### 3.3 Properties of Logs (Extra Practice).notebook

Condense each expression.

39.  $3 \log_5 x - \frac{1}{2} \log_5 (6 - x)$

41.  $7 \log_3 a + \log_3 b - 2 \log_3 (8c)$

43.  $2 \log_8 (9x) - \log_8 (2x - 5)$

45.  $2 \log_6 (5a) + \log_6 b + 7 \log_6 c$

47.  $\frac{1}{4} \ln (2a - b) - \frac{1}{5} \ln (3b + c)$

### 3.3 Properties of Logs (Extra Practice).notebook

**Evaluate each logarithm.**

**49.**  $\log_6 14$

**51.**  $\log_7 5$

**53.**  $\log_{12} 145$

**55.**  $\log_{100} 101$

**57.**  $\log_{-2} 8$