

**6.5A**

**Practice Worksheet**

In Exercises 1–6, expand the logarithmic expression.

1.  $\log_2 5x$

$\log_2 5 + \log_2 x$

2.  $\log 7x^4$

$\log 7 + 4\log x$

3.  $\log_6 \frac{2x}{y}$

$\log_6 2 + \log_6 x - \log_6 y$

4.  $\log_3 12x^7$

$\log_3 12 + 7\log_3 x$

5.  $\log_6 \frac{5x^2}{y^3}$

$\log_6 5 + 2\log_6 x - 3\log_6 y$

6.  $\log_8 6\sqrt{xy}$

$\log_8 6 + \frac{1}{2}\log_8 x + \frac{1}{2}\log_8 y$

In Exercises 7–12, condense the logarithmic expression into a single log.

7.  $\log_7 3 - \log_7 5$

$\log_7 \frac{3}{5}$

8.  $\log 10 - \log 5$

$\log 2$

9.  $3 \ln x + 9 \ln y$

$\ln x^3 y^9$

10.  $\log_2 9 + \frac{1}{2} \log_2 y$

$\log_2 9\sqrt{y}$

11.  $5 \log_9 x - \log_9 4$

$\log_9 \frac{x^5}{4}$

12.  $2 \ln 4 + 5 \ln x + 3 \ln y$

$\ln 16x^5y^3$