

Translate each logarithmic/exponential statement to its equivalent exponential/log statement.

1) $\ln 10 = 2.3026$

2) $\ln s = r$

3) $e^{12/7} = 5.527$

4) $e^{4uv} = m$

Expand each logarithmic expression.

5) $\log(x^2 y^3)$

6) $\log(28xy)$

7) $\ln 10x^3$

8) $\log_{16} x^2 y^{6/5}$

9) $\log_8 \frac{6x^2}{y^4}$

10) $\log_5 \left(\frac{125}{\sqrt{x}} \right)$

11) $\ln \left(\frac{32\sqrt[3]{x}}{y^3} \right)$

12) $\ln \left(\frac{b\sqrt{r}}{6} \right)$

Condense each logarithmic expression.

13) $\log_6 20 + \log_6 x$

14) $\log_3 108 - \log_3 z$

15) $2 \ln t - (\ln x + 3 \ln y)$

16) $\log_5 4 + \frac{1}{3} \log_5 x$

17) $\ln p - \frac{1}{2} \ln v + \ln c$

18) $2(\log_3 20 - \log_3 4) + 0.5 \log_3 4$