

Problem Set 5.5

1) Evaluate the logarithmic expression.

a) $\log_2 8$

b) $\log_6 216$

c) $\log_7 7$

d) $\log_5 \sqrt{5}$

e) $\log_7 \left(\frac{1}{49}\right)$

f) $\ln(1)$

2) Solve for x.

a) $\log_6 x = 2$

b) $\log_{16} x = -1$

c) $\log_x 64 = 3$

3) Expand the expression using the properties of logarithms.

a) $\log_6(3x)$

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

c) $\log(xy^4)$

d) $\log_2\left(\frac{x^5 y}{3}\right)$

4) Condense the expression using the properties of logarithms.

a) $\log_3 7 - \log_3 x$

b) $2\log_8 x + \log_8 6$

c) $3\log_4 2 + \log_4 6 - 2\log_4 3$

d) $\ln(5) + \ln(x) - \ln(y)$

5) Condense the left side of the equation. Then solve for x.

a) $\log_2(6) + \log_2(x) = 6$

b) $\log_5(2) + \log_5(x) - \log_5(3) = 2$

c) $\log_8 2 + \log_8 4x^2 = 1$

d) $\ln 2 - \ln(3x + 2) = 1$