

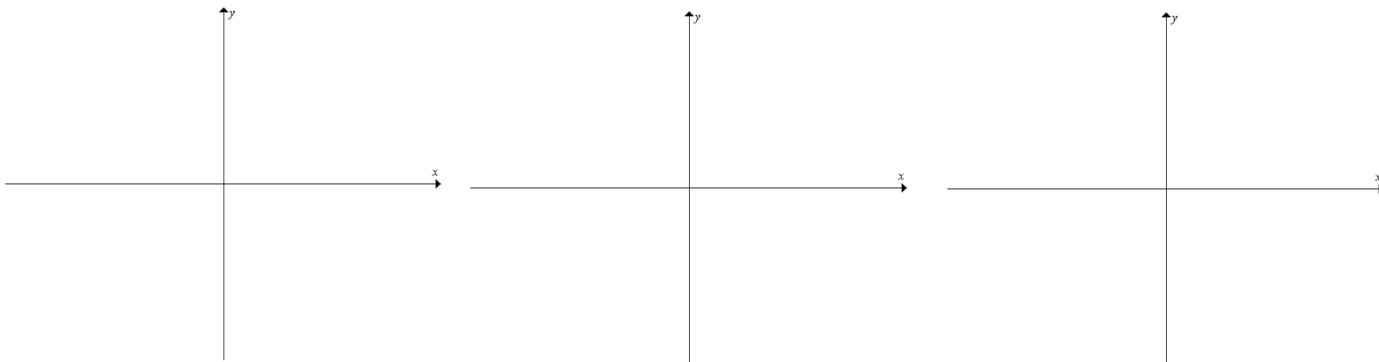
Test Review Exercises -- Logarithms

[1] Sketch each graph. Show asymptotes as dotted lines. Label at least 1 ordered pair.

[a] $y = 2 + 2^{x-2}$

[b] $y = 1 - e^x$

[c] $y = 2 + \log_2(x+1)$



[2] Rewrite each exponential expression as a logarithm.

[a] $4^3 = 64$

[b] $2^5 = 32$

[c] $e^{\frac{1}{2}} = \sqrt{e}$

[d] $e^0 = 1$

[3] Rewrite each logarithm as an exponential expression.

[a] $\log_3 27 = 3$

[b] $\log_{10} \sqrt{10} = \frac{1}{2}$

[c] $\ln e^2 = 2$

[d] $\ln \frac{1}{e} = -1$

[4] Evaluate each logarithm without a calculator.

[a] $\log_2 4 =$

[b] $\log_4 2 =$

[c] $\log_5 1 =$

[d] $\log_2 \frac{1}{2} =$

[e] $\log_{10} \sqrt{10} =$

[f] $\log_6 \frac{1}{\sqrt{6}} =$

[g] $\log_8 8 =$

[h] $\log_8 4 =$

[i] $\log_3 81 =$

[j] $\log_3 \frac{1}{3} =$

[k] $\log_3 3 =$

[l] $\log_3 1 =$

[m] $\log_3 \sqrt[3]{3} =$

[n] $\log_3 \frac{1}{\sqrt{3}} =$

[o] $\log_3 \frac{1}{9} =$

[p] $\log_3 3^5 =$

[q] $\ln e =$

[r] $\ln \frac{1}{e} =$

[s] $\ln e^3 =$

[t] $\ln \sqrt{e} =$

[5] Rewrite each expression as a single logarithm.

[a] $\log_2 3 + \log_2 y =$

[b] $2\log_2 5 + 3\log_2 x =$

[c] $\log_3 p - \log_3 q =$

[d] $3\log_3 x - 4\log_3 y =$

[e] $\ln x - \ln 5 =$

[f] $2\ln 4 - 3\ln y =$

[6] Expand each expression to as many logarithms as possible. Do not leave exponents in final answers.

[a] $\log_2 4x$

[b] $\log_2 \frac{p}{q}$

[c] $\log_3 4x^3$

[d] $\log_3 \frac{x^4}{y^6}$

[e] $\ln \frac{x}{5}$

[f] $\ln \frac{x^2}{y^3}$

[7] Solve each equation.

[a] $\log_2 5 + \log_2 x = 3$

[b] $\log_3 x + \log_3 (x-2) = 1$

[c] $\ln x + \ln 3 = 1$

[d] $2^{5x-1} = 4$

[e] $5^{x^2} = 25$

[f] $3^x = 5$

[g] $5^{2x} = 12$

[h] $e^{2x+3} = 10$