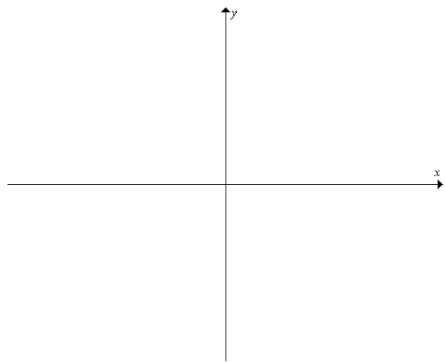


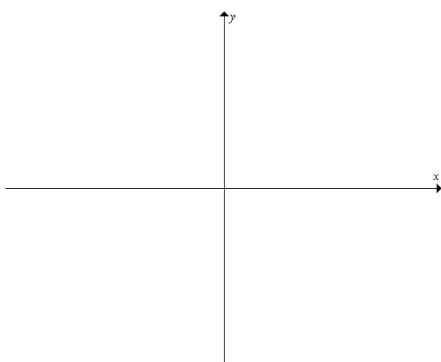
More Test Review:
NO CALCULATORS

[1] Sketch. Show asymptotes as dotted lines and label at least one point with an ordered pair.

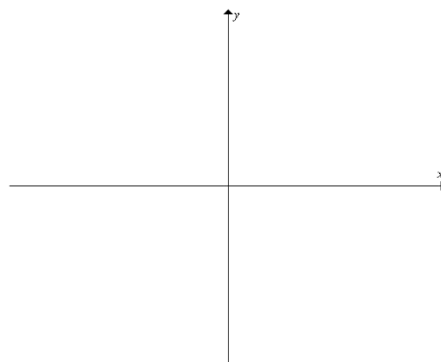
[a] $y = 1 + 2^{x-2}$



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



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



[2] Rewrite each exponential expression as a logarithm.

[a] $5^4 = 625$ _____

[b] $e^{-1} = \frac{1}{e}$ _____

[3] Rewrite each logarithm as an exponential expression.

[a] $\log_4 1024 = 5$ _____

[b] $\log_4 2 = \frac{1}{2}$ _____

[4] Evaluate each logarithm.

[a] $\log_3 27 =$

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

[c] $\log_3 1 =$

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

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

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

[g] $\ln e^2 =$

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

[i] $\ln 1 =$

[j] $\ln \sqrt[3]{e} =$

[5] Rewrite each expression as a single logarithm.

[a] $\log_3 10 + \log_3 x =$

[b] $3\log_3 2 + 3\log_3 x =$

[e] $\ln x - \ln 9 =$

[f] $2\ln x - 3\ln 3 =$

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

[a] $\log_3 5x =$

[b] $\log_3 \frac{x}{2} =$

[c] $\ln \frac{x^3}{10} =$

[d] $\ln 3x^4 =$

[7] Solve each equation.

[a] $\log_3 2 + \log_3 x = 2$

[b] $\log_2 x + \log_2(x-2) = 3$

[c] $3^{2x+5} = 27$

[d] $6^x = 5$

Calculator Section

[8] The town of Omri has a population of 12000 at time $t = 0$ years. The population is growing at 3.5% per year.

[a] Find the population of the town at time $t = 6$ years.

[b] Find to the nearest tenth of a year how long it will take the population to reach 20000.

[9] The half-life of a certain radioactive substance is 120 days. At time $t = 0$ you have 10g of the substance.

[a] To the nearest tenth of a gram, how much of the substance will remain after 30 days?

[b] To the nearest tenth of a day, how long will it take for there to be 8g of the substance remaining?

[10] An exponential growth graph passes through the points (3,5), and (5,9). Find an equation for the graph in the form $y = a \cdot b^x$.