

Log and e Review

1. Condense the following log expressions using the log rules:

a) $\frac{1}{2} \log_2 (2-x) - \frac{3}{4} \log_2 (3+x) - \log_2 (2+x^2)$

b) $3 \ln (2x) + 6 \ln (4x+1) - 9 \ln (2x) - \ln (1-3x)$

2. Use log rules to expand the following expressions:

a) $\log_3 \sqrt[3]{\frac{(1-2x)^4(x-1)}{(x+3)^2}}$

b) $\log_4 \sqrt[3]{\frac{(1-x)^3(x+1)}{(x-2)^5}}$

3. Use the log rules to evaluate without using a calculator (show your work!):

a) $(1/9)^{x-1} = 27^{2x-1}$ b) $e^{-x^2} = e^{-3x-4}$ c) $\log_{1/4} 64$

4. Graph using transformation rules:

a) $Y = \ln(1-x) + 4$ b) $y = \log_{2/3}(x+2) + 5$ c) $f(x) = -e^{x+4} - 2$ d) $-e^{2-x} + 5$

5. Solve the equations using the log & e rules:

a) $3e^{2x} - 15 = 135$

b) $8 - 4 \ln 3x = 4$

c) $\log_2(5-3x) = 4$

d) $\log(x-3) + \log(x) - 1 = 0$

6. A 10,000 investment is placed in an account that is compounded continuously for 20 yrs at a rate of 12% interest. How much money is in the account when it matures?

7. How long would it take to double your initial investment in a savings account that compounds interest continuously at a rate of 10%?