Logarithmic Properties

1. Find the value t in the following by writing logarithmic equations as exponential equations or vice versa.

   (a) $2 = e^{-.02t}$

   (b) $\log_2(t+2) = 5$

   (c) $\log(10^4) = t$

2. Write the expressions as a single logarithm:

   $\ln(x) - \ln(y) + 3\ln(z)$ $\qquad$ $\frac{1}{3}\log(2x+1) - 2\log(x^4 - x^2 - 1)$

3. Expend the expressions:

   $\log_2(2x)$ $\qquad$ $\log\left(\dfrac{a\sqrt{c}}{b^4}\right)$