Log and Exp Review

Here are some fairly simple exercises to review properties of logarithms, for Calculus I. Remember that log and exp are inverse functions. So, \( \log_3 \) cancels out the "3" in \( 3^x \). For example, \( \log_3 3^4 = 4 \).

1) Simplify:
   a) \( \log_2 (1/32) = \)
   b) \( \log_{10} 10^4 = \)
   c) \( \ln \sqrt{e} = \)
   d) \( 4 \ln 2 - \ln 3 + \ln 16 = \)

2) Solve for \( x \)
   a) \( \log_2 (x^2) = 4 \)
   b) \( \log_3 3^x = 7 \)
   c) \( 3 e^{-2x} = 5 \)
   d) \( e^{2x} - e^x = 6 \)

Answers:
1a) -5, b) 4, c) 1/2, d) \( \ln (256/3) \)
2a) 4, b) 7, c) \(-(\ln 5/3)/2\), d) \( \ln 3 \)