

Solving Exponential Equations

1. If possible, rewrite the equation where both sides are expressed as powers of the same base. Then, the exponents will be equal to each other and you can solve.

1) $e^{-x^2} = e^{5x+6}$

2) $4^x = 32$

3) $5 - 3e^x = 2$

4) $6(2^{t+5}) + 4 = 11$

5) $e^{3x} = 5$

6) $e^{3x} = 8$

Solving Logarithmic Equations

1. If possible, rewrite the equation as two logs (with the same base) set equal to each other. You might need to use log properties to make that happen. Then set arguments equal to each other and solve.
2. If there are non-log terms, put all the log terms on one side and the non-log terms on the other. Then use log properties to write the log terms as a single log and convert to an exponential.
3. Make sure to check all solutions...if any of them make the original argument(s) negative or zero, then they are extraneous and should be excluded.

7) $\ln x = \ln 3 + 2$

8) $\log_4(3x + 2) = \log_4(6 - x)$

9) $\log_3(5x + 13) - \log_3 6 = \log_3 3x$

10) $6 + 3 \ln x = 4$

11) $3 \log_4 6x = 9$

12) $\log_{10} x + \log_{10}(x - 9) = 1$