Exponential and Logarithmic Equations

In each of the following equations, solve for x.

1. $6^{2x+1} = 5$

2. $\log_3(x - 1) = 2$

3. $\ln x = -1$

4. $\log_3(\ln x) = 2$

5. $\log_2(x + 1) - \log_2(x - 1) - 3 = 0$

6. $2 \cdot 4^{x+1}4^{3x} = 10$

7. $x - x \ln x = 0$

8. $\log_3 x = 3 - \log_3(x + 6)$

9. $2^{x+1} + 2^x = 5$

Solve the following equations.

1. Solve $7^a = 4^{a-1}$ for a.

2. Solve $2^{2x}(3^{x+1}) = 5^x$ for x.

3. If you invest $5000 into an account with 5% annual interest, how long will it take for your account to triple in value?