

Exponential Function Exercises

In the following exercises use algebra to simplify the equation as far as you can, without using logarithms, and then use either WinPlot or a graphing calculator to estimate the solution(s).

1. Say we invest \$15000 in an account that earns 5.7% interest compounded monthly. How much money will be in the account after 1 year? 5 years? 10 years? 50 years? 100 years?
2. Say we invest \$15000 in an account that earns 5.7% interest compounded daily. How much money will be in the account after 1 year? 5 years? 10 years? 50 years? 100 years?
3. Say we invest \$15000 in an account that earns 5.7% interest compounded continuously. How much money will be in the account after 1 year? 5 years? 10 years? 50 years? 100 years?
4. Say we invest \$10000 in an account that earns 2.3% interest compounded monthly. At the end of each year we withdraw \$150. How much money will be in the account after 5 years? Say we took the total \$750 out at first and left the remaining in the bank for the 5 years, how much money will be in the account at the end of the 5 years?
5. Say we invest \$5000 in an account that earns 2.3% interest compounded continuously. When will the account double in size?
6. Say we invest \$50000 in an account that earns 2.3% interest compounded continuously. When will the account double in size?
7. Say we invest \$1,000,000 in an account that earns 2.3% interest compounded continuously. When will the account double in size?
8. If the population of a small island is growing at a rate of 2.1% with a current population of 100,000 and the island is 200 by 100 miles. How long will it be until each person has only one square foot to stand in?
9. Find the solution(s) to the following equations.
 - (a) $4^x = 5$
 - (b) $7^{2x-1} = 5$
 - (c) $11^x = 12$
 - (d) $7^{2-x} = 3^{x+1}$
 - (e) $11^{5-2x} = 7^{3x+1}$
 - (f) $2^{2-x} = 2^{x+1}$
 - (g) $e^x = x$
 - (h) $e^x = x^2$
 - (i) $e^x = 10$
 - (j) $10^x = e$