

Exponential and Logarithmic Functions

You can enter and evaluate exponential and logarithmic functions using EXCEL, even if the base is e . In order to enter the exponential expression a^x type

$$\text{base} \wedge \text{power}$$

If you wish to evaluate e to a power, use the EXP function. The format is

$$\mathbf{EXP}(\text{number})$$

To evaluate a logarithm, use the LOG function.

$$\mathbf{LOG}(\text{number}, \text{base})$$

If you omit the base, EXCEL will assume the base is 10. If you wish to find the natural logarithm of a number use LN. The format is

$$\mathbf{LN}(\text{number})$$

EXAMPLE: Let $f(x) = 24 e^{-x/200}$ and $g(x) = 5 \log (x+2)$. Create a table of f and g using values for $x = 0, 10, 20, 30, 40, 50, 60$.

Remember to use the cell location for x in each formula.

	A	B	C	D	E
1					
2		x	y=24*e^(-x/200)	y=5 ln(x+2)	
3		0	24	3.465735903	
4		10	22.82950619	12.42453325	
5		20	21.71609803	15.45521227	
6		30	20.65699143	17.32867951	
7		40	19.64953807	18.68834809	
8		50	18.69121879	19.75621859	
9		60	17.7796373	20.63567193	
10					

1. Let $f(x) = 5000 e^{-3x/50}$, create a table of at least 5 values, and use the table to graph the function. Use EXCEL to find the value of x if $f(x) = 2100$.
2. The ACME Corporation is planning on introducing their new product, the Super Deluxe Widget 2000. They would like to reach as many people as possible by using a television advertising campaign in the city Metropolis, whose population is 3 million people. Based on prior experience, the model for the number of people N (in millions) who are aware of the product after t days of advertising was found to be $N = 3(1 - e^{-0.04t})$.
 - a. Create a table and determine the number of people who are aware of the Super Deluxe Widget 2000 at the start of the advertising campaign, after 1 week of advertising, after 5 weeks, after 10 weeks, and after 20 weeks.
 - b. How long will it take before 1 million people are aware of the Super Deluxe Widget 2000?
 - c. How long will it take before 2 million people are aware of the Super Deluxe Widget 2000?