

# Rule to Remember! Exponential & Logarithmic Equations

Name \_\_\_\_\_ **ANSWERS**

**I T I S N E C E S S A R Y T O C H E C K**  
 2 5 2 19 1 18 14 18 19 19 6 15 17 5 10 14 11 18 14 12

**L O G A R I T H M I C E Q U A T I O N S F O R**  
 8 10 16 6 15 2 5 11 20 2 14 18 3 13 6 5 2 10 1 19 4 10 15

**E X T R A N E O U S S O L U T I O N S.**  
 18 7 5 15 6 1 18 10 13 19 19 10 8 13 5 2 10 1 19



*Directions: Solve the following equations for x. Show your work! Find the answer in the table and place the LETTER above the question number to decode the message to remember shown above. Answers are rounded to the nearest hundredth, when needed.*

1.  $7^{-x} = \frac{1}{49}$   $x=2$ ; N
2.  $64^x = 8$   $x=0.5$ ; I
3.  $27^x = 3^{2x+5}$   $x=5$ ; Q
4.  $4^{x-1} = 32$   $x=3.5$ ; F
5.  $8^x = 16^{x-2}$   $x=8$ ; T
6.  $9^{x-2} = 4^x$   $x=5.42$ ; A
7.  $450e^{-0.4x} = 225$   $x=1.73$ ; X
8.  $86 = 43e^{3x}$   $x=0.23$ ; L
9.  $x = 6000e^{-0.08(3)}$   $x=4719.77$ ; J
10.  $900 = (x)e^{(0.4)(3)}$   $x=271.07$ ; O

11.  $\log_2 x + \log_2 5 = 2$   $x=0.8$ ; H
12.  $\log_2(5-3x) = 3$   $x=-1$ ; K
13.  $\log(x+5) = \log 9 + \log(3x+2)$   $x=-0.5$ ; U
14.  $\log 12 = \log x + \log(x+1)$   $x=3$ ; C  
 $x = -4$  extraneous
15.  $\log(x-7) - \log(x+3) = \log 6$   $\emptyset$ ; R  
 $x = -5$  extraneous
16.  $\ln 5 = \ln x + \ln(x+4)$   $x=1$ ; G
17.  $\ln x = \frac{3}{2} \ln 16$   $x=64$ ; Y
18.  $\ln(x+3) + \ln(x-3) = \ln 40$   $x=7$ ; E
19.  $\ln x = 5 \ln 2 - \ln 8$   $x=4$ ; S
20.  $\ln(x^2 - 4) - \ln(x+2) = \ln 4$   $x=6$ ; M

**Answer Table:** Beware! More answers than questions!

<b>A: 5.42</b>	<b>B: -2</b>	<b>C: 3</b>	<b>D: -5</b>
<b>E: 7</b>	<b>F: 3.5</b>	<b>G: 1</b>	<b>H: 0.8</b>
<b>I: 0.5</b>	<b>J: 4719.77</b>	<b>K: -1</b>	<b>L: 0.23</b>
<b>M: 6</b>	<b>N: 2</b>	<b>O: 271.07</b>	<b>P: -4</b>
<b>Q: 5</b>	<b>R: <math>\emptyset</math></b>	<b>S: 4</b>	<b>T: 8</b>
<b>U: -0.5</b>	<b>V: 285.71</b>	<b>W: 171.31</b>	<b>X: 1.73</b>
<b>Y: 64</b>	<b>Z: 4718.71</b>		