

Solving Exponential Equations with Logarithms

Solve each equation. Round your answers to the nearest ten-thousandth.

1) $3^b = 17$

2) $12^r = 13$

3) $9^n = 49$

4) $16^v = 67$

5) $3^a = 69$

6) $6^r = 51$

7) $6^n = 99$

8) $20^r = 56$

9) $5 \cdot 18^{6x} = 26$

10) $e^{x-1} - 5 = 5$

11) $9^{n+10} + 3 = 81$

12) $11^{n-8} - 5 = 54$

$$13) 16^{n-7} + 5 = 24$$

$$14) 20^{-6n} + 6 = 55$$

$$15) 5 \cdot 6^{3m} = 20$$

$$16) 8^{-5a} - 5 = 53$$

$$17) 3.4e^{2-2n} - 9 = -4$$

$$18) -6e^{8n+8} - 3 = -23$$

$$19) -e^{-3.9n-1} - 1 = -3$$

$$20) -2e^{7v+5} - 10 = -17$$

$$21) -3e^{7a+9} + 6 = -6$$

$$22) -3e^{9x-1} + 6 = -58$$

$$23) -e^{6-9p} + 5 = -48.4$$

$$24) -10e^{2-2b} - 6 = -66$$

$$25) 6e^{-4k-10} - 4 = 63$$

$$26) 6e^{5x-6} - 4 = 50$$

Solving Exponential Equations with Logarithms

Solve each equation. Round your answers to the nearest ten-thousandth.

1) $3^b = 17$

2.5789

$$\log_3(17)$$

2) $12^r = 13$

1.0322

$$\log_{12}(13)$$

3) $9^n = 49$

1.7712

$$\log_9(49)$$

4) $16^v = 67$

1.5165

$$\log_{16}(67)$$

5) $3^a = 69$

3.854

$$\log_3(69)$$

6) $6^r = 51$

2.1944

$$\log_6(51)$$

7) $6^n = 99$

2.5646

$$\log_6(99)$$

8) $20^r = 56$

1.3437

$$\log_{20}(56)$$

9) $5 \cdot 18^{6x} = 26$

0.0951

$$\frac{1}{6} \log_{18} \left(\frac{26}{5} \right)$$

10) $e^{x-1} - 5 = 5$

3.3026

$$\ln(10) + 1$$

11) $9^{n+10} + 3 = 81$

-8.0172

$$\log_9(78) - 10$$

12) $11^{n-8} - 5 = 54$

9.7005

$$\log_{11}(59) + 8$$

$$13) 16^{n-7} + 5 = 24$$

8.062

$$\log_{16}(19) + 7$$

$$14) 20^{-6n} + 6 = 55$$

-0.2165

$$-\frac{1}{6} \log_{20}(49)$$

$$15) 5 \cdot 6^{3m} = 20$$

0.2579

$$\frac{1}{3} \log_6(4)$$

$$16) 8^{-5a} - 5 = 53$$

-0.3905

$$-\frac{1}{5} \log_8(58)$$

$$17) 3.4e^{2-2n} - 9 = -4$$

0.8072

$$1 - \frac{1}{2} \ln\left(\frac{25}{17}\right)$$

$$18) -6e^{8n+8} - 3 = -23$$

-0.8495

$$\frac{1}{8} \ln\left(\frac{10}{3}\right) - 1$$

$$19) -e^{-3.9n-1} - 1 = -3$$

-0.4341

$$-\frac{10}{39} (1 + \ln(2))$$

$$20) -2e^{7v+5} - 10 = -17$$

-0.5353

$$\frac{1}{7} (\ln(7/2) - 5)$$

$$21) -3e^{7a+9} + 6 = -6$$

-1.0877

$$\frac{1}{7} (\ln(4) - 9)$$

$$22) -3e^{9x-1} + 6 = -58$$

0.4511

$$\frac{1}{9} (\ln(24/3) + 1)$$

$$23) -e^{6-9p} + 5 = -48.4$$

0.2247

$$\frac{1}{9} (6 - \ln(53.4))$$

$$24) -10e^{2-2b} - 6 = -66$$

0.1041

$$1 - \frac{1}{2} \ln(6)$$

$$25) 6e^{-4k-10} - 4 = 63$$

-3.1032

$$-\frac{1}{4} (10 + \ln(67/6))$$

$$26) 6e^{5x-6} - 4 = 50$$

1.6394

$$\frac{1}{5} (\ln(9) + 6)$$