

Solving exponential and logarithmic equations (2.4 and 2.5)

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

1) $7 \cdot 10^{3x} = 0$

2) $-4 \cdot 7^{v-1} = -89.7$

3) $-5 \cdot 16^{k+6} = -93$

4) $-9 \cdot 9^{-6x} = -14$

5) $-5 \cdot 14^{x-9} = -73$

6) $-4 \cdot 10^{a-9} = -56$

7) $2e^{6x-9} - 2 = 16.8$

8) $-10e^{10-10a} - 1 = -40$

9) $-5e^{6a-8} + 6.5 = 17$

10) $-4e^{8n-9} + 6.2 = -39.4$

11) $3e^{-k-2} - 3 = 37$

12) $-6e^{3x+3} + 9 = -11$

Solve each equation.

13) $\log_5 (4x - 5) - \log_5 4 = 1$

14) $\log_8 (x - 2) - \log_8 2 = \log_8 17$

$$15) \log_2 10 + \log_2 x = \log_2 67$$

$$16) \log_2 5 + \log_2 -4x = 2$$

$$17) \log_8 (x - 2) - \log_8 5 = 1$$

$$18) \log_6 x + \log_6 10 = 2$$

$$19) \log_9 10 + \log_9 x = 2$$

$$20) \log_3 (6 - 5x) - \log_3 8 = 1$$

$$21) \log_6 7 + \log_6 (x + 10) = 2$$

$$22) \log_3 5 + \log_3 (-2x - 5) = 4$$

$$23) \log_4 (4x + 3) - \log_4 10 = \log_4 15$$

$$24) \log_2 6 + \log_2 (x - 4) = 1$$

Answers to Solving exponential and logarithmic equations (2.4 and 2.5)

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|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| 1) No solution. | 2) 2.5983 | 3) -4.9457 | 4) -0.0335 |
| 5) 10.0159 | 6) 10.1461 | 7) 1.8735 | 8) 0.8639 |
| 9) No solution. | 10) 1.4292 | 11) -4.5903 | 12) -0.5987 |
| 13) $\left\{\frac{25}{4}\right\}$ | 14) $\{36\}$ | 15) $\left\{\frac{67}{10}\right\}$ | 16) $\left\{-\frac{1}{5}\right\}$ |
| 17) $\{42\}$ | 18) $\left\{\frac{18}{5}\right\}$ | 19) $\left\{\frac{81}{10}\right\}$ | 20) $\left\{-\frac{18}{5}\right\}$ |
| 21) $\left\{-\frac{34}{7}\right\}$ | 22) $\left\{-\frac{53}{5}\right\}$ | 23) $\left\{\frac{147}{4}\right\}$ | 24) $\left\{\frac{13}{3}\right\}$ |