

Logarithm - Solve

L2MS3

Solve for x.

Example 1:

$$\begin{aligned}\log_{64} 4 &= x+2 \\ (64)^{x+2} &= 4 \\ 4^{3x+6} &= 4 \\ 3x+6 &= 1 \\ x &= -\frac{5}{3}\end{aligned}$$

Example 2:

$$\begin{aligned}\log_4 4x^{\frac{1}{2}} &= 2 \\ 4^2 &= (4x)^{\frac{1}{2}} \\ 4^4 &= 4x \\ x &= \mathbf{64}\end{aligned}$$

Solve for x.

1) $\log_4 2 = x-5$

x =

2) $\log_{x+2} (27) = 3$

3) $\log_2 \left(\frac{1}{4}\right) = 2x+1$

x =

5) $\log_{\frac{1}{3}} \left(\frac{1}{9}\right) = 4x$

x =

7) $\log_{x-1} (16) = \frac{1}{2}$

x =

9) $2 \log_4 (x-2) = 4$

x =

10) $\log_{128} 2 = x+3$

x =

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$$\begin{aligned}\log_{64} 4 &= x+2 \\ (64)^{x+2} &= 4 \\ 4^{3x+6} &= 4 \\ 3x+6 &= 1 \\ x &= -\frac{5}{3}\end{aligned}$$

Example 2:

$$\begin{aligned}\log_4 4x^{\frac{1}{2}} &= 2 \\ 4^2 &= (4x)^{\frac{1}{2}} \\ 4^4 &= 4x \\ x &= \mathbf{64}\end{aligned}$$

Solve for x.

1) $\log_4 2 = x-5$

x = $\frac{11}{2}$

2) $\log_{x+2} (27) = 3$

3) $\log_2 \left(\frac{1}{4}\right) = 2x+1$

x = $-\frac{3}{2}$

5) $\log_{\frac{1}{3}} \left(\frac{1}{9}\right) = 4x$

x = $\frac{1}{2}$

7) $\log_{x-1} (16) = \frac{1}{2}$

x = 257

9) $2 \log_4 (x-2) = 4$

x = 18

10) $\log_{128} 2 = x+3$

x = $-\frac{20}{7}$

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