Name : _____   Score : _____

Logarithm - Solve

Solve for x.

Example 1:

$$\log_{x-1} 27 = 3$$
$$(x-1)^3 = 27$$
$$(x-1)^3 = 3^3$$
$$x-1 = 3$$
$$x = \mathbf{4}$$

Example 2:

$$\log_4\left(\frac{1}{16}\right) = 2x$$
$$4^{2x} = \frac{1}{16}$$
$$4^{2x} = 4^{-2}$$
$$x = \mathbf{-1}$$

Solve for x.

1) $\log_{5x} 25 = 1$

x = ⬭

2) $\log_3 (x+3) = 4$

x = ⬭

3) $\log_7 49 = 2x+6$

x = ⬭

4) $\log_4\left(\frac{1}{16}\right) = x-5$

x = ⬭

5) $\log_2 8 = 3x$

x = ⬭

6) $\log_{x+13} (729) = 3$

x = ⬭

7) $\log_5\left(\frac{x}{2}\right) = 3$

x = ⬭

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

x = ⬭

9) $\log_{2x} 144 = 2$

x = ⬭

10) $\log_2 (3x+2) = 5$

x = ⬭

Answer key

Logarithm - Solve

Solve for x.

Example 1:

$$\log_{x-1} 27 = 3$$
$$(x-1)^3 = 27$$
$$(x-1)^3 = 3^3$$
$$x-1 = 3$$
$$x = \mathbf{4}$$

Example 2:

$$\log_4\left(\frac{1}{16}\right) = 2x$$
$$4^{2x} = \frac{1}{16}$$
$$4^{2x} = 4^{-2}$$
$$x = \mathbf{-1}$$

Solve for x.

1) $\log_{5x} 25 = 1$

x = **5**

2) $\log_3 (x+3) = 4$

x = **78**

3) $\log_7 49 = 2x+6$

x = **−2**

4) $\log_4\left(\frac{1}{16}\right) = x-5$

x = **3**

5) $\log_2 8 = 3x$

x = **1**

6) $\log_{x+13} (729) = 3$

x = **−4**

7) $\log_5\left(\frac{x}{2}\right) = 3$

x = **250**

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

x = **265**

9) $\log_{2x} 144 = 2$

x = **6**

10) $\log_2 (3x+2) = 5$

x = **10**