Name : _____ Score : _____

L2ES1

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 = ____

Name : _____ **Answer key** Score : _____

L2ES1

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**

Name : _____ Score : _____

Logarithm - Solve

L2ES2

Solve for x.

Example 1:

$\log_5 25 = x+2$

$5^{x+2} = 25$

$5^{x+2} = 5^2$

$x = \mathbf{0}$

Example 2:

$\log_3 (x-4) = 3$

$3^3 = x-4$

$27 = x-4$

$x = \mathbf{31}$

Solve for x.

1) $\log_{x+7} (16) = 4$

x =

2) $\log_5 5x = 3$

3) $\log_6 \left(\frac{1}{36}\right) = x-2$

x =

5) $\log_{8x} 256 = 2$

x =

7) $\log_9 (x-1) = \frac{1}{2}$

x =

x =

9) $\log_7 (x+7) = 2$

x =

10) $\log_2 32 = x+9$

x =

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L2ES2

Logarithm - Solve

Solve for x.

Example 1:

$\log_5 25 = x+2$

$5^{x+2} = 25$

$5^{x+2} = 5^2$

$x = \mathbf{0}$

Example 2:

$\log_3 (x-4) = 3$

$3^3 = x-4$

$27 = x-4$

$x = \mathbf{31}$

Solve for x.

1) $\log_{x+7} (16) = 4$

x = **–5**

2) $\log_5 5x = 3$

3) $\log_6 \left(\frac{1}{36}\right) = x-2$

x = **0**

5) $\log_{8x} 256 = 2$

x = **2**

7) $\log_9 (x-1) = \frac{1}{2}$

x = **4**

x = **1**

9) $\log_7 (x+7) = 2$

x = **42**

10) $\log_2 32 = x+9$

x = **–4**

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Logarithm - Solve

L2ES3

Solve for x.

Example 1:

$\log_2 (x+6) = 5$

$2^5 = x+6$

$32 = x+6$

$x = \mathbf{26}$

Example 2:

$\log_2 \left(\frac{1}{8}\right) = 3x$

$2^{3x} = \frac{1}{8}$

$2^{3x} = 2^{-3}$

$x = \mathbf{-1}$

Solve for x.

1) $\log_3 81 = 2x-4$

x =

2) $\log_{10} (x+4) = 2$

3) $\log_2 \left(\frac{1}{32}\right) = 5x$

x =

5) $\log_{x+2} (125) = 3$

x =

7) $\log_3 3x = 4$

x =

x =

9) $\log_6 (x-3) = 2$

x =

10) $\log_{x+5} (243) = 5$

x =

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L2ES3

Logarithm - Solve

Solve for x.

Example 1:

$\log_2 (x+6) = 5$

$2^5 = x+6$

$32 = x+6$

$x = \mathbf{26}$

Example 2:

$\log_2 \left(\frac{1}{8}\right) = 3x$

$2^{3x} = \frac{1}{8}$

$2^{3x} = 2^{-3}$

$x = \mathbf{-1}$

Solve for x.

1) $\log_3 81 = 2x-4$

x = **4**

2) $\log_{10} (x+4) = 2$

3) $\log_2 \left(\frac{1}{32}\right) = 5x$

x = **−1**

5) $\log_{x+2} (125) = 3$

x = **3**

7) $\log_3 3x = 4$

x = **27**

x = **2**

9) $\log_6 (x-3) = 2$

x = **39**

10) $\log_{x+5} (243) = 5$

x = **−2**

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