

## Solving Exponential Equations with Logarithms

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

1)  $3^b = 17$

2.5789

2)  $12^r = 13$

1.0322

3)  $9^n = 49$

1.7712

4)  $16^v = 67$

1.5165

5)  $3^a = 69$

3.854

6)  $6^r = 51$

2.1944

7)  $6^n = 99$

2.5646

8)  $20^r = 56$

1.3437

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

0.0951

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

3.3026

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

-8.0172

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

9.7005

## Exponential Equations Not Requiring Logarithms

Solve each equation.

1)  $4^{2x+3} = 1$

$$\left\{-\frac{3}{2}\right\}$$

2)  $5^{3-2x} = 5^{-x}$

$$\{3\}$$

3)  $3^{1-2x} = 243$

$$\{-2\}$$

4)  $3^{2a} = 3^{-a}$

$$\{0\}$$

5)  $4^{3x-2} = 1$

$$\left\{\frac{2}{3}\right\}$$

6)  $4^{2p} = 4^{-2p-1}$

$$\left\{-\frac{1}{4}\right\}$$

7)  $6^{-2a} = 6^{2-3a}$

$$\{2\}$$

8)  $2^{2x+2} = 2^{3x}$

$$\{2\}$$

9)  $6^{3m} \cdot 6^{-m} = 6^{-2m}$

$$\{0\}$$

10)  $\frac{2^x}{2^x} = 2^{-2x}$

$$\{0\}$$

11)  $10^{-3x} \cdot 10^x = \frac{1}{10}$

$$\left\{\frac{1}{2}\right\}$$

12)  $3^{-2x+1} \cdot 3^{-2x-3} = 3^{-x}$

$$\left\{-\frac{2}{3}\right\}$$