Answer Key · Lesson 8.4: Solving Exponential Equations

School Launch · Algebra II · Unit 8 · Worksheet A · for the parent

Key

1. $x = -2$

Solve: $2^{x} = \frac{1}{4}$.

2. $x = 1$

Solve: $5^{x} = 5$.

3. $x = 0$

Solve: $3^{x} = 1$.

4. $x = -1$

1. Write $\dfrac{1}{8}$ as a power of 2: 2^{-3}
2. Equate exponents: $3x = -3 \Rightarrow x = -1$

Solve: $2^{3x+0} = \frac{1}{8}$.

5. $x = -2$

1. Write $\dfrac{1}{9}$ as a power of 3: 3^{-2}
2. Equate exponents: $2x + 2 = -2 \Rightarrow x = -2$

Solve: $3^{2x+2} = \frac{1}{9}$.

6. $x = 1$

1. Write $\dfrac{1}{2}$ as a power of 2: 2^{-1}
2. Equate exponents: $2x - 3 = -1 \Rightarrow x = 1$

Solve: $2^{2x-3} = \frac{1}{2}$.

7. $x = 0$

1. Write $\dfrac{1}{27}$ as a power of 3: 3^{-3}
2. Equate exponents: $3x - 3 = -3 \Rightarrow x = 0$

Solve: $3^{3x-3} = \frac{1}{27}$.

8. $x \approx 4.01$

1. Take the log of both sides.
2. $x = \frac{\ln 82}{\ln 3}$

Solve to the nearest hundredth: $3^{x} = 82$.

9. $x \approx 6.30$

1. Take logs: $x = \dfrac{\ln 79}{\ln 2} = \dfrac{4.3694}{0.6931} \approx 6.30$

Solve to the nearest hundredth: $2^{x} = 79$.

10. $x \approx 2.57$

1. Take the log of both sides.
2. $x = \frac{\ln 63}{\ln 5}$

Solve to the nearest hundredth: $5^{x} = 63$.