

1. What is the solution to the equation $7^x = 3$?

- A $x = \frac{\log 3}{\log 7}$
- B $x = \frac{\log 7}{\log 3}$
- C $x = \log\left(\frac{3}{7}\right)$
- D $x = \log\left(\frac{7}{3}\right)$

2. Solve $4^{3x-1} = 8^x$.

- A $x = -2$
- B $x = -1$
- C $x = \frac{2}{3}$
- D $x = 2$

3. Max solved the equation, $5^{x+3} = 25^{x-2}$, but made an error. His work is shown below.

$$25^{x-2} = 5^{x+3} \quad \text{LINE 1}$$

$$(5^2)^{x-2} = 5^{x+3} \quad \text{LINE 2}$$

$$5^{2x-2} = 5^{x+3} \quad \text{LINE 3}$$

$$2x-2 = x+3 \quad \text{LINE 4}$$

$$x = 5 \quad \text{LINE 5}$$

Fill in the blanks to complete the sentence.

Max made an error in line _____. The correct equation is _____.

Find all solutions of the equation. Round to the nearest thousandth, if necessary.

4. $\left(\frac{1}{3}\right)^{x-6} = 9^x$

5. $5^{x+3} = 5^{2x-1}$

6. $0.0001 = 10^{2x}$

7. $14^{x+7} = 196^{x+2}$

8. $15 = 4^x$

9. $4 + 3^{x-5} = 15$

10. $e^x + 1 = 5$

11. $4^x - 3 = 6$