

Solve each equation. Round your answer to three decimal places.

<p>1. <math>13^x = 7</math></p> $\ln 13^x = \ln 7$ $\frac{x \ln 13}{\ln 13} = \frac{\ln 7}{\ln 13}$ $x \approx 0.759$	<p>2. <math>4^{5x} = 9</math></p> $\log 4^{5x} = \log 9$ $\frac{5x \log 4}{\log 4} = \frac{\log 9}{\log 4}$ $5x = \frac{\log 9}{\log 4} \quad \frac{5x}{5} = \frac{1.585}{5}$ $x \approx 0.317$
<p>3. <math>6^{x+2} + 1 = 3</math> <del><math>x = -1</math></del></p> $x+2 = 0.387$ $6^{x+2} = 2$ $\log 6^{x+2} = \log 2$ $\frac{(x+2) \log 6}{\log 6} = \frac{\log 2}{\log 6}$ $x \approx -1.613$	<p>4. <math>1.5 = 2.7^{2x-3} - 4</math> <del><math>+4</math></del> <del><math>+4</math></del></p> $5.5 = 2.7^{2x-3}$ $\ln 5.5 = \ln 2.7^{2x-3}$ $\frac{\ln 5.5}{\ln 2.7} = \frac{(2x-3) \ln 2.7}{\ln 2.7}$ $2x-3 = 1.716 \quad \frac{2x}{2} = \frac{4.716}{2}$ $x \approx 2.358$
<p>5. <math>5^{-4x} = 3.21</math></p> $\ln 5^{-4x} = \ln 3.21$ $\frac{-4x \ln 5}{\ln 5} = \frac{\ln 3.21}{\ln 5}$ $-4x = 0.725 \quad x \approx -0.181$	<p>6. <math>8^{\frac{x}{5}} = 3</math></p> $\log 8^{\frac{x}{5}} = \log 3$ $\frac{x}{5} \frac{\log 8}{\log 8} = \frac{\log 3}{\log 8}$ $\frac{x}{5} = 0.528 \quad x \approx 2.642$
<p>7. <math>4^{2x} = 9^{x-1}</math></p> $\log 4^{2x} = \log 9^{x-1}$ $\frac{2x \log 4}{\log 4} = \frac{(x-1) \log 9}{\log 4}$ $2x = (x-1) 1.585$ $2x = 1.585x - 1.585$ $0.415x = -1.585$ $x \approx -3.819$	<p>8. <math>7^{3x} = 12^{x+2}</math></p> $\ln 7^{3x} = \ln 12^{x+2}$ $\frac{(3x) \ln 7}{\ln 7} = \frac{(x+2) \ln 12}{\ln 7}$ $3x = 1.277(x+2)$ $3x = 1.277x + 2.554$ $1.723x = 2.554$ $x \approx 1.482$