

$$\begin{aligned}
 38. \quad 2^{x+1} &= 5^{1-2x} \\
 \log_2 2^{x+1} &= \log_2 5^{1-2x} \\
 x+1 &= (1-2x) \log_2 5 \\
 x+1 &= \log_2 5 - 2x \log_2 5 \\
 x + 2x \log_2 5 &= \log_2 5 - 1 \\
 x(1 + 2 \log_2 5) &= \log_2 5 - 1
 \end{aligned}$$

$$x = \frac{\log_2 5 - 1}{1 + 2 \log_2 5}$$

$$\begin{aligned}
 \text{or } \log_5 2^{x+1} &= \log_5 5^{1-2x} \\
 (x+1) \log_5 2 &= 1-2x \\
 x \log_5 2 + \log_5 2 &= 1-2x \\
 x \log_5 2 + 2x &= 1 - \log_5 2 \\
 x(\log_5 2 + 2) &= 1 - \log_5 2
 \end{aligned}$$

$$x = \frac{1 - \log_5 2}{\log_5 2 + 2}$$

$$\begin{aligned}
 40. \quad \left(\frac{4}{3}\right)^{1-x} &= 5^x \\
 \log_5 \left(\frac{4}{3}\right)^{1-x} &= \log_5 5^x \\
 (1-x) \log_5 \left(\frac{4}{3}\right) &= x \\
 \log_5 \left(\frac{4}{3}\right) - x \log_5 \left(\frac{4}{3}\right) &= x \\
 \log_5 \left(\frac{4}{3}\right) &= x(1 + \log_5 \left(\frac{4}{3}\right))
 \end{aligned}$$

$$x = \frac{\log_5 \left(\frac{4}{3}\right)}{1 + \log_5 \left(\frac{4}{3}\right)}$$

$$\begin{aligned}
 42. \quad (.3)^{1+x} &= 1.7^{2x-1} \\
 \log_{.3} (.3)^{1+x} &= \log_{.3} (1.7)^{2x-1} \\
 (1+x) &= 2x \log_{.3} 1.7 - \log_{.3} 1.7 \\
 1 + \log_{.3} 1.7 &= x(2 \log_{.3} 1.7 - 1)
 \end{aligned}$$

$$x = \frac{1 + \log_{.3} 1.7}{2 \log_{.3} 1.7 - 1}$$

$$\begin{aligned}
 44. \quad e^{x+3} &= \pi^x \\
 \ln e^{x+3} &= \ln \pi^x \\
 x+3 &= x \ln \pi \\
 x - x \ln \pi &= -3 \\
 x &= \frac{-3}{1 - \ln \pi}
 \end{aligned}$$

$$\begin{aligned}
 46. \quad .3(4^{.2x}) &= .2 \\
 4^{.2x} &= \frac{2}{3} \\
 \log_4 4^{.2x} &= \log_4 \left(\frac{2}{3}\right) \\
 .2x &= \log_4 \frac{2}{3}
 \end{aligned}$$

$$x = \frac{\log_4 \frac{2}{3}}{.2}$$