

50. $\frac{1}{2}[\ln(x-4) + 5\ln(x^2+4x)] = \frac{1}{2}\ln[(x-4)(x^2+4x)^5] = \ln\sqrt{(x-4)(x^2+4x)^5}$
52. $2^{3x-5} = 7 \Leftrightarrow \log 2^{3x-5} = \log 7 \Leftrightarrow 3x-5 = \frac{\log 7}{\log 2} \Leftrightarrow x = \frac{1}{3}\left(5 + \frac{\log 7}{\log 2}\right) \approx 2.60$
54. $\ln(2x-3) = 14 \Leftrightarrow e^{\ln(2x-3)} = e^{14} \Leftrightarrow 2x-3 = e^{14} \Leftrightarrow x = \frac{1}{2}(3 + e^{14}) \approx 601303.64$
56. $2^{1-x} = 3^{2x+5} \Leftrightarrow \log 2^{1-x} = \log 3^{2x+5} \Leftrightarrow (1-x)\log 2 = (2x+5)\log 3 \Leftrightarrow$
 $x(2\log 3 + \log 2) = \log 2 - 5\log 3 \Leftrightarrow x = \frac{\log 2 - 5\log 3}{\log 2 + 2\log 3} = \frac{\log \frac{2}{3^5}}{\log(2 \cdot 9)} \approx -1.66$
58. $\log_8(x+5) - \log_8(x-2) = 1 \Leftrightarrow \log_8\left(\frac{x+5}{x-2}\right) = 1 \Leftrightarrow \frac{x+5}{x-2} = 8^1 = 8 \Leftrightarrow$
 $x+5 = 8x-16 \Leftrightarrow 7x = 21 \Leftrightarrow x = 3$
60. $2^{3^x} = 5 \Leftrightarrow \log 2^{3^x} = \log 5 \Leftrightarrow 3^x \log 2 = \log 5 \Leftrightarrow 3^x = \frac{\log 5}{\log 2} \Leftrightarrow$
 $\log 3^x = \log\left(\frac{\log 5}{\log 2}\right) \Leftrightarrow x \log 3 = \log\left(\frac{\log 5}{\log 2}\right) \Leftrightarrow x = \frac{1}{\log 3} \cdot \log\left(\frac{\log 5}{\log 2}\right) \approx 0.77$
62. $2^{3x-5} = 7 \Leftrightarrow (3x-5)\log 2 = \log 7 \Leftrightarrow x = \frac{1}{3}\left(5 + \frac{\log 7}{\log 2}\right) \approx 2.602452$
64. $e^{-15k} = 10000 \Leftrightarrow -15k = \ln 10000 \Leftrightarrow k = -\frac{1}{15} \ln 10000 \approx -0.614023$