

$$2e^{2x} + 5e^x - 3 = 0$$

$$(2e^x - 1)(e^x + 3) = 0$$

$$\left. \begin{array}{l} 2e^x - 1 = 0 \\ 2e^x = 1 \\ e^x = \frac{1}{2} \\ x = \ln \frac{1}{2} \end{array} \right\} \begin{array}{l} e^x + 3 = 0 \\ e^x = -3 \\ \cancel{x = \ln(-3)} \\ \text{extraneous} \end{array}$$

$$2y^2 + 5y - 3 = 0$$

$$(2y - 1)(y + 3) = 0$$

$$\frac{1}{2} \ln(x+3) - \ln x = 0$$

$$\ln(x+3)^{1/2} - \ln x = 0$$

$$\ln \frac{\sqrt{x+3}}{x} = 0$$

$$e^0 = \frac{\sqrt{x+3}}{x}$$

$$1 = \frac{\sqrt{x+3}}{x}$$

$$x = \sqrt{x+3}$$

$$\frac{1}{2} \ln(x+3) - \ln x = 0$$

$$\ln(x+3)^{1/2} = \ln x$$

$$(\sqrt{x+3})^2 = (x)^2$$

$$x+3 = x^2$$

$$0 = x^2 - x - 3$$

$$\frac{1 \pm \sqrt{(-1)^2 - 4(1)(-3)}}{2}$$

$$\frac{1 \pm \sqrt{13}}{2}$$

$$\frac{1 + \sqrt{13}}{2}$$

$$\frac{\cancel{1 - \sqrt{13}}}{2}$$

extraneous

$$\ln(x+3) + \ln(x-4) = 3\ln 2$$

$$\ln \underline{(x-3)(x+4)} = \ln 2^3$$

$$(x-3)(x+4) = 2^3$$

$$x^2 + x - 12 = 8$$

$$x^2 + x - 20 = 0$$

$$(x+5)(x-4) = 0$$

$$~~x = -5~~ \quad x = 4$$

extraneous

$$\ln \frac{(x+3)(x-4)}{8} = 0$$
$$e^0 = \frac{(x+3)(x-4)}{8}$$
$$1 = \frac{(x+3)(x-4)}{8}$$

$$\frac{400}{1 + 95e^{-.6x}} = 150$$

$$\frac{400}{150} = 1 + 95e^{-.6x}$$

$$\frac{8}{3} = 1 + 95e^{-.6x}$$

$$\frac{5}{3} = 95e^{-.6x}$$

$$\frac{1}{57} = e^{-.6x}$$

$$\ln\left(\frac{1}{57}\right) = -.6x$$

$$X = \frac{\ln\left(\frac{1}{57}\right)}{-.6}$$

$$\approx 6.783$$

$$\log x - \frac{1}{2} \log(x+4) = 1$$

$$\log x - \log(x+4)^{\frac{1}{2}} = 1$$

$$\log \frac{x}{\sqrt{x+4}} = 1$$

$$10^1 = \frac{x}{\sqrt{x+4}}$$

$$10\sqrt{x+4} = x$$

$$\sqrt{x+4} = \frac{x}{10}$$

$$x+4 = \frac{x^2}{100}$$

$$100x+400 = x^2$$

$$0 = x^2 - 100x - 400$$

$$\frac{100 \pm \sqrt{(-100)^2 - 4(1)(-400)}}{2}$$

$$\frac{100 \pm \sqrt{11600}}{2}$$

$$\frac{100 + \sqrt{11600}}{2}$$