5,5,93

Exercise 5,5,93 Express y as a function of x. The constant C is a positive number:

$$\ln(y-3) = -4x + \ln(C).$$

Solution

We have $\ln(y-3) - \ln(C) = -4x$ or (exponentiating)

$$e^{\ln(y-3)-\ln(C)} = e^{-4x}$$

$$\text{or } e^{\ln(y-3)} e^{-\ln(C)} = e^{-4x}$$

$$\text{or } e^{\ln(y-3)} \left(e^{\ln(C)}\right)^{-1} = e^{-4x}$$

$$\text{or } (y-3)\, C^{-1} = e^{-4x} \text{ by Theorem 5,5,A(1)}$$

$$\text{or } y - 3 = Ce^{-4x} \text{ or } \boxed{y = Ce^{-4x} + 3}$$

□