

p 186

13, 15, 29, 36-46 (even)

13] $2^x = 11$

$$\log 2^x = \log 11$$

$$x \log 2 = \log 11$$

$$x = \frac{\log 11}{\log 2}$$

29] $\log(5x^3) = 2$

$$10^{\log(5x^3)} = 10^2$$

$$5x^3 = 100$$

$$x^3 = 20$$

$$x = \sqrt[3]{20}$$

38] $200(2^{t/5}) = 355$

$$2^{t/5} = \frac{355}{200}$$

$$\log 2^{t/5} = \log\left(\frac{71}{40}\right)$$

$$\frac{t}{5} \log 2 = \log\left(\frac{71}{40}\right)$$

$$t = \frac{5 \log\left(\frac{71}{40}\right)}{\log 2}$$

15]

$$e^{0.12x} = 100$$

$$\ln(e^{0.12x}) = \ln 100$$

$$0.12x = \ln 100$$

$$x = \frac{\ln 100}{0.12}$$

32] $84(0.74)^t = 38$

$$(0.74)^t = \frac{38}{84}$$

$$\log(0.74)^t = \log\left(\frac{19}{42}\right)$$

$$t \log(0.74) = \log\left(\frac{19}{42}\right)$$

$$t = \frac{\log\left(\frac{19}{42}\right)}{\log(0.74)}$$

40]

$$e^{x+5} = 7 \cdot 2^x$$

$$\ln e^{x+5} = \ln(7 \cdot 2^x)$$

$$x+5 = \ln 7 + \ln 2^x$$

$$x = \ln 7 + x \ln 2 - 5$$

$$x - x \ln 2 = \ln 7 - 5$$

$$x(1 - \ln 2) = \ln 7 - 5$$

$$x = \frac{\ln 7 - 5}{1 - \ln 2}$$

$$\underline{42]} \log_3 3^{5x+1} = 2$$

$$5x+1 = 2$$

$$5x = 1$$

$$x = \frac{1}{5}$$

44]

$$6000 \left(\frac{1}{2}\right)^{t/15} = 1000$$

$$\left(\frac{1}{2}\right)^{t/15} = \frac{1}{6}$$

$$\log \left(\frac{1}{2}\right)^{t/15} = \log \left(\frac{1}{6}\right)$$

$$\frac{t}{15} \log \left(\frac{1}{2}\right) = \log 6^{-1}$$

$$\frac{t}{15} \log (2^{-1}) = -\log 6$$

$$-t \log (2) = -15 \log 6$$

$$t = \frac{15 \log 6}{\log 2}$$

46]

$$ab^x = c$$

$$b^x = \frac{c}{a}$$

$$\log b^x = \log \left(\frac{c}{a}\right)$$

~~$$x \log b$$~~

$$x \log b = \log \left(\frac{c}{a}\right)$$

$$x = \frac{\log c - \log a}{\log b}$$