

HW56

AZ

1. $6^x = 59$

$$\log_6 59 = x$$

$$\boxed{\frac{\log 59}{\log 6} = x}$$

2. $\log_8 42 = x + 5$

$$\frac{\log 42}{\log 8} = x + 5$$

$$\boxed{\frac{\log 42}{\log 8} - 5 = x}$$

3. $\log_{15} 28 = 6x$

$$\frac{\log 28}{\log 15} = 6x$$

$$\boxed{\frac{\log 28}{6 \log 15} = x}$$

4. $7^x = 4$

$$\log_7 4 = x$$

$$\boxed{\frac{\log 4}{\log 7} = x}$$

5. $8^{x-11} = 12$

$$\log_8 12 = x - 11$$

$$\frac{\log 12}{\log 8} = x - 11$$

$$\boxed{\frac{\log 12}{\log 8} + 11 = x}$$

6. $\frac{17,978.02}{9000} = \frac{9000(1 + 0.0179)^x}{9000}$

$$1.998 = 1.0179^x$$

$$\log 1.998 = x \log 1.0179$$

$$\frac{\log 1.998}{\log 1.0179} = x$$

$$\boxed{39 \text{ years} = x}$$

7. $0.25 = 0.8^x$

$$\log 0.25 = x \log 0.8$$

$$\frac{\log 0.25}{\log 0.8} = x$$

$$\boxed{6.2 \text{ weeks} = x}$$

8. $2086.06 = 608(1 + 0.0801)^x$

$$3.431 = 1.0801^x$$

$$\log 1.0801 \cdot 3.431 = x$$

$$\frac{\log 3.431}{\log 1.0801} = x$$

$$\boxed{16 \text{ years} = x}$$

9. $96,627 = 11,211(1 + 0.0418)^x$

$$8.62 = 1.0418^x$$

$$\log 8.62 = x \log 1.0418$$

$$\frac{\log 8.62}{\log 1.0418} = x$$

$$\boxed{52.6 \text{ years} = x}$$

$$10. \quad 1 = 10(1 - .03)^x$$

$$\frac{1}{10} = 0.97^x$$

$$\log_{.97} \frac{1}{10} = x$$

$$\frac{\log \frac{1}{10}}{\log 0.97} = x$$

$$\boxed{75.6 \text{ weeks} = x}$$

$$11. \quad 20876.86 = a(1 + .07)^5$$

$$20876.86 = a(1.4)$$

$$\boxed{\$14,912.04 = a}$$

$$12. \quad 25,000 = 5,000(1 + .035)^x$$

$$5 = 1.035^x$$

$$\log_{1.035} 5 = x$$

$$\frac{\log 5}{\log 1.035} = x$$

$$\boxed{46.8 \text{ years} = x}$$