

3.1

41. \$100,000

 $r = 9\%$

continuous

$$A = Pe^{rt}$$

$$t=1 \quad 100,000 = P e^{.09(1)}$$

$$\frac{100,000}{e^{.09(1)}} = P$$

51.

$$P = 5e^{-.1507t}$$

$$y = 5e^{-.1507x}$$

53.
$$P(t) = 100e^{.2179t}$$

$$P(0) = 100e^{.2179(0)}$$
$$= 100$$

$$P(5) = 100e^{.2179(5)}$$

$$P(10) = 100e^{.2179(10)}$$

3.2 Logarithmic Functions

$$x = a^y \quad \log_a x = y$$

$$8 = 2^3 \quad \log_2 8 = 3$$

$$25 = 5^2 \quad \log_5 25 = 2$$

$$7^3 = 243 \quad \log_7 243 = 3$$

$$2^5 = 32 \quad \log_2 32 = 5$$

$$e^3 = 20.086 \quad \log_e 20.086 = 3$$

$$2.72^3 \quad \ln 20.086 = 3$$

e Natural Base

ln Natural logarithm

$$e^6 = 403.429 \quad \ln 403.429 = 6$$

$$10^3 = 1000 \quad \log_{10} 1000 = 3$$

$$\log 1000 = 3$$

Base 10
Common
logarithm

Evaluate
 $\log_5 125 = x$ $5^x = 125$

③

$$5^3 = 125$$

$$\log_5 125$$

$$\log_5 5^3$$

③

$$\log_3 81 = x$$

$$3^x = 81$$

④

$$3^4 = 81$$

$$\log_3 81$$

$$\log_3 3^4$$

④

$$\log_8 2$$

$$8^x = 2$$

$\frac{1}{3}$

$$2^3 = 8$$

$$\sqrt[3]{8} = 2$$

$$8^{\frac{1}{3}} = 2$$

$$\ln e^{\textcircled{3}}$$

$$\log_e e^{\textcircled{3}}$$

3

$$\log_8 2 = \frac{1}{3} \quad 8^{\frac{1}{3}} = 2$$

$$\log_{10} 429$$

$$\log_{10} 10 = 1$$

$$\log_{10} 100 = 2$$

$$\log_{10} 1000 = 3$$

Calc

$$\log 429$$

$$2.634$$

$$\ln 9$$

$$\ln 9$$

$$2.197$$