



Advanced Math

1) c 2) e 3) a 4) b 5) d 6) f

8) $A = Pe^{rt}$

$$40000 = 20000e^{.105t}$$

$$2 = e^{.105t}$$

$$\ln 2 = .105t$$

$$6.601 = t$$

$$\boxed{6.601 \text{ years}}$$

$$A = 20000e^{.105(10)}$$

$$\boxed{\$57153.02}$$

12) $A = Pe^{rt}$

$$19205 = 600e^{.10t}$$

$$32.008\bar{3} = e^{.10t}$$

$$\ln(32.008\bar{3}) = 10t$$

$$.34660 = t$$

$$\boxed{34.660\%}$$

$$1200 = 600e^{.34660(x)}$$

$$2 = e^{.34660x}$$

$$\ln 2 = .34660x$$

$$\boxed{2.000 \text{ years}}$$

10) $A = Pe^{rt}$

$$20000 = 10000e^{5r}$$

$$2 = e^{5r}$$

$$\ln 2 = 5r$$

$$\boxed{13.863\%}$$

$$A = 10000e^{10(.13863)}$$

$$\boxed{A = 40000}$$

14) $A = Pe^{rt}$

$$20000 = Ae^{.08(10)}$$

$$20000 = 2.2255A$$

$$\boxed{\$8986.58}$$

$$2P = Pe^{.08t}$$

$$2 = e^{.08t}$$

$$\ln 2 = .08t$$

$$\boxed{8.664 \text{ years}}$$

18) annually : 6.942 years
monthly : 6.630 years
daily : 6.602 years
continuously : 6.601 years

(a) $2P = P(1 + \frac{.105}{1})^{1x}$
 $2 = (1.105)^x$
 $\ln 2 = x \ln(1.105)$
 6.942 years

(m) $2P = P(1 + \frac{.105}{12})^{12x}$
 $2 = (1.00875)^{12x}$
 $\ln 2 = 12x \ln(1.00875)$
 6.630 years

(c) $2P = Pe^{.105t}$
 $2 = e^{.105t}$
 $\ln 2 = .105t$
 6.601

26) $y = ae^{bx}$

$$\frac{1}{2}a = ae^{b(1620)}$$

$$\frac{1}{2} = e^{1620b}$$

$$\ln \frac{1}{2} = 1620b$$

$$-4.2766863 \times 10^{-4}$$

$$1.5 = ae^{-.00427 \dots (1000)}$$

$$1.5 = ae^{-.42766863}$$

$$\boxed{2.301g}$$

27) $B = -1.20965094 \times 10^{-4}$
amount $\boxed{2.257g}$

28) $B = -1.20965094 \times 10^{-4}$
amount $\boxed{2.258g}$

29) $B = -2.8454316 \times 10^{-5}$
amount $\boxed{2.161g}$

30) $B = -2.8454316 \times 10^{-5}$
amount $\boxed{.412g}$

35) 2013

36) 2001

37) $k = .0136930253$
pop: 3288

38) $k = .0112513474$
pop: 157232