

## Solutions Section 3.1, 3.2

3.1: 79) Average daily balance

$$\text{Days } 1 \rightarrow 20: \$955.13 + \$5000 = \$5955.13$$

$$\text{Days } 21 \rightarrow 28: \$5955.13 - \$50 = \$5905.13$$

$$\text{Average daily balance} = \frac{20(\$5955.13) + 8(\$5905.13)}{28}$$

$$r = 25.74\% = .2574 \quad \frac{119102.60 + 47241.04}{28}$$

$t =$

$$= \frac{166343.64}{28} = \$5940.84$$

$$I = P \cdot r \cdot t = 5940.84(.2574)\left(\frac{28}{360}\right) = \$118.94$$

3.2: 37)  $A = P\left(1 + \frac{r}{m}\right)^{mt}$

$$P = \$100$$

A]  $m = 1$

$$r = .06$$

$$A = 100(1 + .06)^4$$

$$t = 4 \text{ yrs}$$

$$= \$126.25$$

$$I = A - P = \$26.25$$

B]  $m = 4$

$$A = 100\left(1 + \frac{.06}{4}\right)^{4(4)} = 100(1.015)^{16} = \$126.90$$

$$I = A - P = \$26.90$$

C]  $m = 12$

$$A = 100\left(1 + \frac{.06}{12}\right)^{12(4)} = 100(1.005)^{48} = \$127.05$$

$$I = A - P = \$27.05$$

$$3.2: 53) \quad A] \text{ APY}_{\text{cont}} = e^r - 1 \quad r = .0515$$

$$= e^{.0515} - 1$$

$$= .0528 = 5.28\%$$

$$B] \text{ APY}_{\text{semi}} = \left(1 + \frac{r}{m}\right)^m - 1 \quad r = .052$$

$$m = 2$$

$$= \left(1 + \frac{.052}{2}\right)^2 - 1$$

$$= .0527 = 5.27\%$$

$$3.2: 57) \quad A = P e^{rt} \quad A = \$8600$$

Solve for  $t$

$$P = \$6000$$

$$\frac{A}{P} = e^{rt}$$

$$r = .096$$

$$t = ?$$

$$\ln\left(\frac{A}{P}\right) = \ln(e^{rt})$$

$$= rt$$

$$t = \frac{1}{r} \ln\left(\frac{A}{P}\right) = \frac{1}{.096} \ln\left(\frac{8600}{6000}\right)$$

$$= \frac{1}{.096} (.36)$$

$$= 3.75 \text{ yrs}$$

$$= 3 \text{ yrs } 9 \text{ months}$$