

Section 8.4

$$\textcircled{9} \quad m=4 \quad t=10 \quad r=0.099$$

$$i = \frac{r}{m} \\ = 0.02475$$

$$n = mt \\ = 40$$

$$\textcircled{11} \quad m=2 \quad t=16 \quad r=0.0505$$

$$i = \frac{r}{m} \\ = 0.02525$$

$$n = mt \\ = 32$$

$$\textcircled{15} \quad n=30 \quad i=0.04 \quad PMT=200 \\ PV = PMT \cdot \frac{(1 - (1+i)^{-n})}{i}$$

$$= \frac{200 (1 - 1.04^{-30})}{0.04}$$

$$\approx \$3458.41$$

Note: To type 1.04^{-30} on most calculators:

$$1.04 \boxed{y^x} 30 \boxed{+/-}$$

$$(17) \quad PV = 40\,000 \quad n = 96 \quad i = 0.0075$$

$$PV = PMT \cdot \frac{(1 - (1+i)^{-n})}{i}$$

$$40000 = PMT \cdot \frac{(1 - 1.0075^{-96})}{0.0075}$$

$$\frac{40000 (0.0075)}{(1 - 1.0075^{-96})} = PMT$$

$$PMT \approx \$586.01$$

(29)

36 months = 3 years so $t = 3$

$r = 0.0756 \quad m = 12$

$$PMT = 350$$

We want the PV (this is the amount you can borrow).

$$\boxed{\begin{array}{l} i = \frac{r}{m} \\ = \frac{0.0756}{12} \end{array} \quad \begin{array}{l} n = mt \\ = 36 \end{array}}$$

$$\begin{aligned} PV &= PMT \cdot \frac{(1 - (1+i)^{-n})}{i} \\ &= 350 \cdot \frac{(1 - (1 + \frac{0.0756}{12})^{-36})}{(\frac{0.0756}{12})} \end{aligned}$$

$$\approx \$11241.81$$

$$\begin{aligned} \text{Interest} &= \text{Total Payments} - PV \\ &\approx 36(350) - 11241.81 \\ &\approx \$1358.19 \end{aligned}$$

(31)

$$PV = 2500$$

$$n = 48$$

$$i = 0.0125$$

↑
number of
payments or
number of
"installments"

↑
interest rate per period
(not to be confused with
 r , the annual interest rate)

$$PV = PMT \cdot \frac{(1 - (1+i)^{-n})}{i}$$

$$2500 = PMT \cdot \frac{(1 - 1.0125^{-48})}{0.0125}$$

$$\frac{2500(0.0125)}{(1 - 1.0125^{-48})} = PMT$$

$$PMT \approx \$69.58$$

$$\text{Interest} = \text{Total Payments} - PV$$

$$\approx 48(69.58) - 2500$$

$$\approx \$839.84$$