Section 8.3

(7) $t = 20 \quad r = 0.08 \quad m = 4$

$$i = \frac{r}{m} = \frac{0.08}{4} = 0.02$$

$$n = mt = 80$$

(11) $t = 4 \quad r = 0.09 \quad m = 12$

$$i = \frac{r}{m} = \frac{0.09}{12} = 0.0075$$

$$n = mt = 48$$

(15) $n = 20 \quad i = 0.03 \quad PMT = 500$

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

$$= 500 \cdot \frac{(1.03^{20} - 1)}{0.03}$$

$$\approx \$13435.19$$

(17) $FV = 5000 \quad n = 15 \quad i = 0.01$

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

$$5000 = PMT \cdot \frac{(1.01^{15} - 1)}{0.01}$$

$$\frac{5000\,(0.01)}{(1.01^{15} - 1)} = PMT$$

$$PMT \approx \$310.62$$

(27) $r = 0.0665 \quad m = 12 \quad PMT = 500 \quad t = 10$

$$FV = PMT \cdot \frac{((1+i)^n - 1)}{i} \quad \boxed{\text{where } i = \frac{r}{m} = \frac{0.0665}{12},\ n = mt = 120}$$

$$= 500 \cdot \frac{\left(\left(1 + \frac{0.0665}{12}\right)^{120} - 1\right)}{\left(\frac{0.0665}{12}\right)}$$

$$\approx \$84895.40$$

Interest = FV − Total Payments

$= FV - n(PMT)$

$= 84895.40 - 120(500)$

$= \$24895.40$

(29) $PMT = 300 \quad r = 0.06 \quad m = 12 \quad t = 5$

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

$$\boxed{\text{where } i = \frac{r}{m} = 0.005, \quad n = mt = 60}$$

$$FV = 300 \cdot \frac{(1.005^{60} - 1)}{0.005}$$

$$\approx \$20931.01$$

(31) $r = 0.0635 \quad m = 12 \quad FV = 200000 \quad t = 15$

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

$$\boxed{\text{where } i = \frac{r}{m} = \frac{0.0635}{12} \text{ and } n = mt = 180}$$

$$200000 = PMT \cdot \frac{\left(\left(1 + \frac{0.0635}{12}\right)^{180} - 1\right)}{\left(\frac{0.0635}{12}\right)}$$

$$\frac{200000\left(\frac{0.0635}{12}\right)}{\left(\left(1 + \frac{0.0635}{12}\right)^{180} - 1\right)} = PMT$$

$$PMT \approx \$667.43$$

33 $FV = 100\,000 \quad t = 8 \quad r = 0.075 \quad m = 12$

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

$$\boxed{\text{where } i = \frac{r}{m} = \frac{0.075}{12} = 0.00625, \quad n = mt = 96}$$

$$100\,000 = PMT \cdot \frac{(1.00625^{96} - 1)}{0.00625}$$

$$\frac{100000(0.00625)}{(1.00625^{96} - 1)} = PMT$$

$$PMT \approx \$763.39$$