

PROBLEM (Page 433 #14).

$$i = \frac{.0685}{12}, \quad PV = .80(220,000), \quad m = 360$$

$$PMT = \frac{\left[ \left( \frac{.0685}{12} \right) (176,000) \right]}{\left[ 1 - \left( 1 + \frac{.0685}{12} \right)^{-360} \right]} = 1153.26$$

PROBLEM (Page 435 #30).

$$PV = 300,000, \quad FV = 60,000, \quad i = \frac{.06}{12} = .005, \quad PMT = 4000$$

$$PV = FV(1+i)^{-m} + PMT \frac{1 - (1+i)^{-m}}{i}$$

$$300000 = 60000(1.005)^{-m} + 4000 \left[ \frac{1 - (1.005)^{-m}}{.005} \right]$$

$$300000 = 60000(1.005)^{-m} + 800000 [1 - (1.005)^{-m}]$$

$$300000 = 60000(1.005)^{-m} + 800000 - 800000(1.005)^{-m}$$

$$-500000 = 60000(1.005)^{-m} - 800000(1.005)^{-m}$$

$$-500000 = -740000(1.005)^{-m}$$

$$\frac{50}{74} = 1.005^{-m}$$

$$\ln \left( \frac{50}{74} \right) = \ln 1.005^{-m}$$

$$\ln \left( \frac{50}{74} \right) = -m \ln 1.005$$

$$m = -\frac{\ln \left( \frac{50}{74} \right)}{\ln 1.005} = 78.6 \text{ or } 79 \text{ payments}$$