U7/L4 Annuities – Future Value p. 511 # 3, 5, 6, 10

Q asks for the interest she earns but answer is the full future value

3. $FV = \frac{R[(1+i)^n - 1]}{i}$

$= 650\left[\left(1+\frac{0.046}{2}\right)^{50} - 1\right] \div \left(\frac{0.046}{2}\right)$

$= 650[(1.023)^{50} - 1] \div 0.023$

$\doteq 59\,837.37$

Interest Earned After 25 Yrs $= 59\,837.37 - 650(2)(25)$

$\doteq \$\ 27\,337.37$

5. a) $FV = 1500[(1.063)^{10} - 1] \div 0.063$

$\doteq \$\ 20\,051.96$

b) $FV = 250[(1.018)^{6} - 1] \div 0.018$

$\doteq \$\ 1569.14$

c) $FV = 2400[(1.012)^{28} - 1] \div 0.012$

$\doteq \$\ 79\,308.62$

d) $FV = 25\left[\left(1+\frac{0.08}{12}\right)^{420} - 1\right] \div \left(\frac{0.08}{12}\right)$

$\doteq \$\ 57\,347.06$

6. a) $R = \frac{FVi}{[(1+i)^n - 1]}$

$= \frac{1\,000\,000\left(\frac{0.102}{12}\right)}{\left[\left(1+\frac{0.102}{12}\right)^{480} - 1\right]}$

$\doteq 148.77$

b) $R = \frac{FVi}{[(1+i)^n - 1]}$

$= \frac{1\,000\,000\left(\frac{0.051}{12}\right)}{\left[\left(1+\frac{0.051}{12}\right)^{480} - 1\right]}$

$\doteq 638.38$

10.

$R = 150$

$n = 12 \times 10$ or 120

$FV = \$\ 25\,000$

$FV = \frac{R[(1+i)^n - 1]}{i}$

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

$\frac{25000}{150} = \frac{[(1+i)^{120} - 1]}{i}$

$\frac{500}{3} = \frac{[(1+i)^{120} - 1]}{i}$