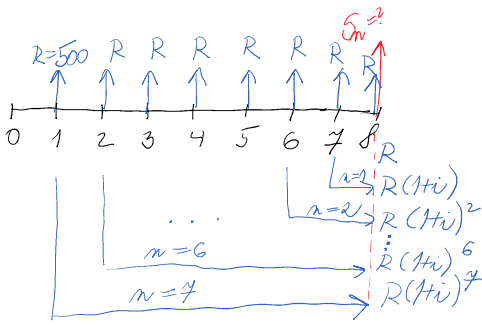


PR1: BUDŮCA HODNOTA RENTY S_n



$$R = 500$$

$$i = 9,06 \quad p = 1$$

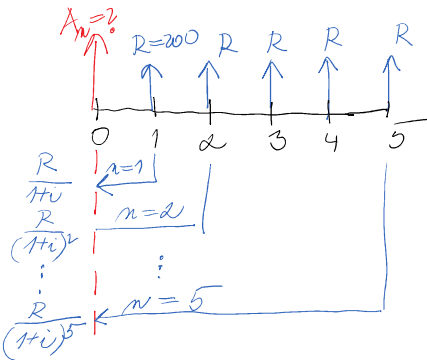
$$m = 8 \quad m = 1$$

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

$$S_8 = 500 \frac{(1+9,06)^8 - 1}{9,06}$$

$$S_8 = 4\,948,73395$$

PR2: SŮČASNÁ HODNOTA RENTY A_n



$$n = 5$$

$$R = 200 \quad p = 1$$

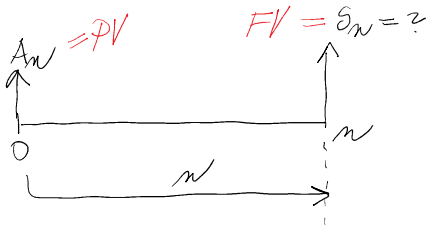
$$i = 9,06 \quad m = 1$$

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

$$A_5 = 200 \cdot \frac{1 - (1+9,06)^{-5}}{9,06} =$$

$$= 842,47276$$

PR3



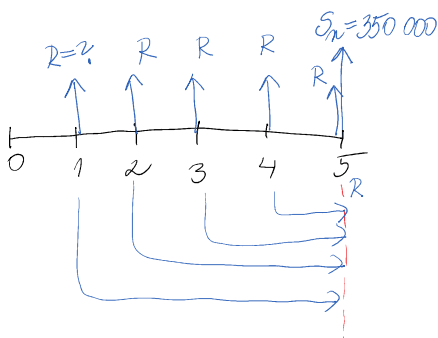
$$FV_n = PV (1+i)^n$$

$$S_n = A_n (1+i)^n =$$

$$= 842,47276 \cdot (1+9,06)^5 =$$

$$= 1\,127,4159$$

PR4



$$S_5 = 350\,000$$

$$n = 5$$

$$i = 9,11$$

$$p = 1$$

$$m = 1$$

$$R = ?$$

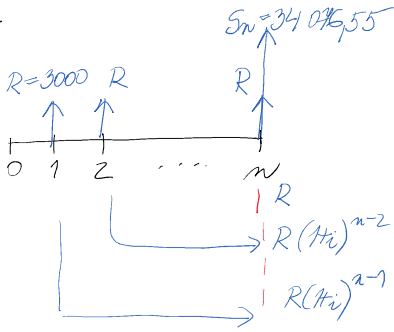
$$S_n = R \frac{(1+i)^n - 1}{i}$$

$$350\,000 = R \frac{(1+9,11)^5 - 1}{9,11} \quad | \cdot \frac{9,11}{(1+9,11)^5 - 1}$$

$$R = 350\,000 \cdot \frac{9,11}{(1+9,11)^5 - 1}$$

$$R = 56\,199,61$$

PR 5



$$S_n = 34\,076,55$$

$$R = 3000$$

$$i = 0,028$$

$$p = 1$$

$$m = 1$$

$$n = ?$$

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

$$34\,076,55 = 3000 \frac{(1+0,028)^n - 1}{0,028} \quad | \cdot \frac{0,028}{3000}$$

$$1,028^n - 1 = 34\,076,55 \cdot \frac{0,028}{3000} \quad | + 1$$

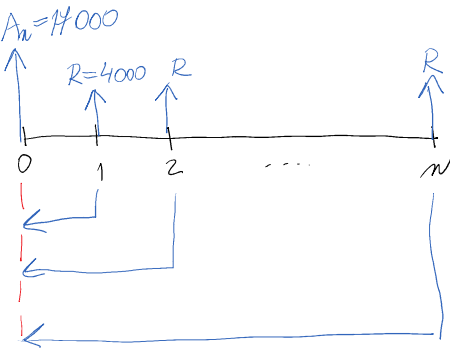
$$1,028^n = 34\,076,55 \cdot \frac{0,028}{3000} + 1 \quad | \ln(\)$$

$$\ln 1,028^n = \ln \left(34\,076,55 \cdot \frac{0,028}{3000} + 1 \right) \quad | : \ln 1,028$$

$$n = \frac{\ln \left(34\,076,55 \cdot \frac{0,028}{3000} + 1 \right)}{\ln 1,028}$$

$$\underline{n = 10}$$

PR 6



$$A_n = 17\,000$$

$$R = 4000$$

$$i = 0,04$$

$$p = 1$$

$$m = 1$$

$$n = 8$$

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

$$17\,000 = 4000 \frac{1 - (1+0,04)^{-n}}{0,04} \quad | \cdot \frac{0,04}{4000}$$

$$1 - 1,04^{-n} = 17\,000 \cdot \frac{0,04}{4000} \quad | - 17\,000 \frac{0,04}{4000} + 1,04^{-n}$$

$$1 - 17\,000 \frac{0,04}{4000} = 1,04^{-n}$$

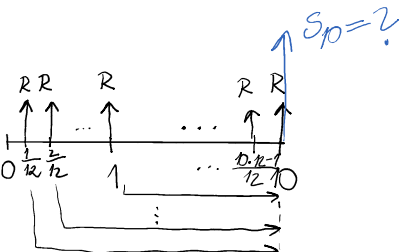
$$1,04^{-n} = 1 - 17\,000 \frac{0,04}{4000} \quad | \ln(\)$$

$$-n \cdot \ln 1,04 = \ln \left(1 - 17\,000 \frac{0,04}{4000} \right) \quad | \cdot \left(\frac{-1}{\ln 1,04} \right)$$

$$n = - \frac{\ln \left(1 - 17\,000 \frac{0,04}{4000} \right)}{\ln 1,04}$$

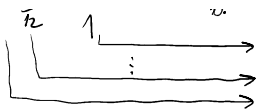
$$\underline{n = 4,75}$$

PR 8



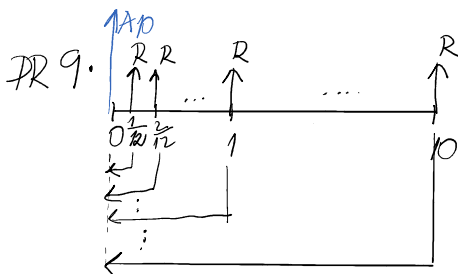
$$S_m = R \frac{(1+i/m)^{m \cdot n} - 1}{(1+i/m)^{m/n} - 1}$$

$$= \left(1 + \frac{0,1}{4} \right)^{4 \cdot 10} - 1$$



$$\begin{aligned}
 R &= 15 \\
 j &= 0,1 \\
 p &= 12 \\
 m &= 4 \\
 n &= 10 \\
 \hline
 S_{10} &= ?
 \end{aligned}$$

$$\begin{aligned}
 S_{10} &= 15 \frac{(1 + \frac{0,1}{4})^{4 \cdot 10} - 1}{(1 + \frac{0,1}{4})^{\frac{4}{12}} - 1} = \\
 &= \underline{3058,25217}
 \end{aligned}$$



$$\begin{aligned}
 A_{10} &= 3058,25217 \\
 j &= 0,1 \\
 p &= 12 \\
 m &= 4 \\
 n &= 10 \\
 \hline
 R &= ?
 \end{aligned}$$

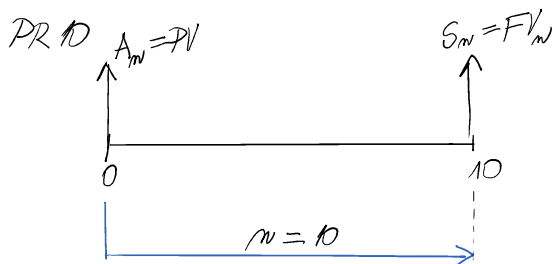
$$A_n = R \frac{1 - (1 + \frac{j}{m})^{-m \cdot n}}{(1 + \frac{j}{m})^{\frac{m}{p}} - 1}$$

$$3058,25217 = R \cdot \frac{1 - (1 + \frac{0,1}{4})^{-4 \cdot 10}}{(1 + \frac{0,1}{4})^{\frac{4}{12}} - 1}$$

$$\left| \frac{(1 + \frac{0,1}{4})^{\frac{4}{12}} - 1}{1 - (1 + \frac{0,1}{4})^{-4 \cdot 10}} \right.$$

$$R = 3058,25217 \cdot \frac{(1 + \frac{0,1}{4})^{\frac{4}{12}} - 1}{1 - (1 + \frac{0,1}{4})^{-4 \cdot 10}}$$

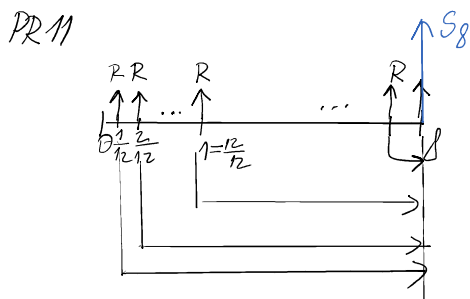
$$\underline{R = 4927596}$$



$$FV_n = PV (1 + \frac{j}{m})^{m \cdot n}$$

$$S_m = A_n (1 + \frac{j}{m})^{m \cdot n}$$

$$\begin{aligned}
 S_{10} &= 3058,25217 \cdot (1 + \frac{0,1}{4})^{4 \cdot 10} = \\
 &= \underline{8114,45346}
 \end{aligned}$$



$$S_8 = 13204,61$$

$$n = 8$$

$$j = 0,034$$

$$p = 12$$

$$m = 2$$

$$R = ?$$

$$S_n = R \frac{(1 + \frac{j}{m})^{m \cdot n} - 1}{(1 + \frac{j}{m})^{\frac{m}{p}} - 1}$$

$$13204,61 = R \frac{(1 + \frac{0,034}{2})^{2 \cdot 8} - 1}{(1 + \frac{0,034}{2})^{\frac{2}{12}} - 1}$$

$$\left| \frac{(1 + \frac{0,034}{2})^{\frac{2}{12}} - 1}{(1 + \frac{0,034}{2})^{2 \cdot 8} - 1} \right.$$

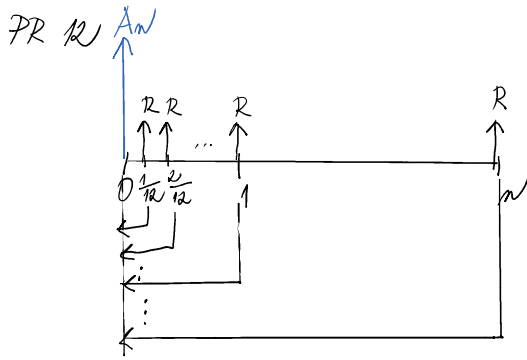
$$R = 13204,61 \cdot \frac{(1 + \frac{0,034}{2})^{\frac{2}{12}} - 1}{(1 + \frac{0,034}{2})^{16} - 1} =$$

$$\frac{0,034}{2} = 0,017$$

$$\underline{R = 120}$$



$$A_n = R \cdot \frac{1 - (1 + \frac{j}{m})^{-m \cdot n}}{(1 + \frac{j}{m})^{\frac{m}{p}} - 1} \quad m \cdot n = p \quad \frac{1 - (1 + \frac{j}{m})^{-m \cdot n}}{(1 + \frac{j}{m})^{\frac{m}{p}} - 1}$$



$$A_n = 20\,000$$

$$R = 200$$

$$j = 0,015$$

$$p = 12$$

$$m = 12$$

$$n = ?$$

$$A_n = R \cdot \frac{1 - (1 + \frac{j}{m})^{-m \cdot n}}{(1 + \frac{j}{m})^{\frac{m}{p}} - 1} \stackrel{m=p}{=} R \cdot \frac{1 - (1 + \frac{j}{m})^{-m \cdot n}}{\frac{j}{m}}$$

$$20\,000 = 200 \cdot \frac{1 - (1 + \frac{0,015}{12})^{-12n}}{(1 + \frac{0,015}{12})^{\frac{12}{12}} - 1} \quad | : 200$$

$$100 = \frac{1 - (1 + \frac{0,015}{12})^{-12n}}{1 + \frac{0,015}{12} - 1} \quad | \cdot \frac{0,015}{12}$$

$$100 \cdot \frac{0,015}{12} = 1 - (1 + \frac{0,015}{12})^{-12n} \quad | -100 \cdot \frac{0,015}{12} + (1 + \frac{0,015}{12})^{-12n}$$

$$(1 + \frac{0,015}{12})^{-12n} = 1 - 100 \cdot \frac{0,015}{12} \quad | \ln(\quad)$$

$$\ln(1 + \frac{0,015}{12})^{-12n} = \ln(1 - \frac{1,5}{12})$$

$$-12n \ln(1 + \frac{0,015}{12}) = \ln(1 - \frac{1,5}{12}) \quad | \cdot \frac{1}{-12 \ln(1 + \frac{0,015}{12})}$$

$$n = \frac{\ln(1 - \frac{1,5}{12})}{-12 \ln(1 + \frac{0,015}{12})}$$

$$n = 89$$