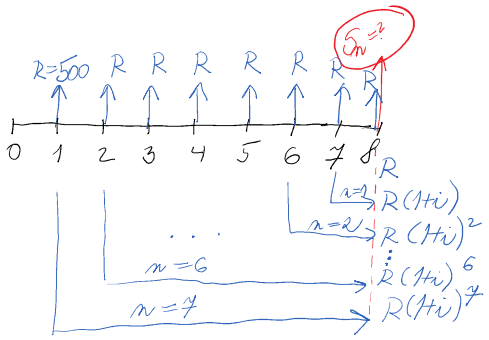
Polehotná renta

streda 5. marca 2025 10:00

PR 1: BUDÚCA HODNOTA RENTY S_n



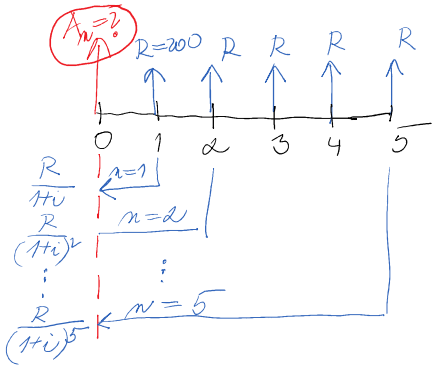
$R = 500$
$i = 906$
$n = 8$
$p = 1$
$m = 1$

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

$$S_8 = 500 \frac{(1+906)^8 - 1}{906}$$

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

PR 2 SÚČASNÁ HODNOTA RENTY A_n



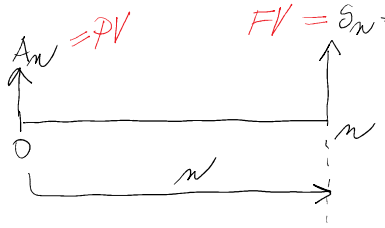
$n = 5$
$R = 200$
$i = 906$
$p = 1$
$m = 1$

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

$$A_5 = 200 \cdot \frac{1 - (1+906)^{-5}}{906} =$$

$$= 842{,}47276$$

PR 3



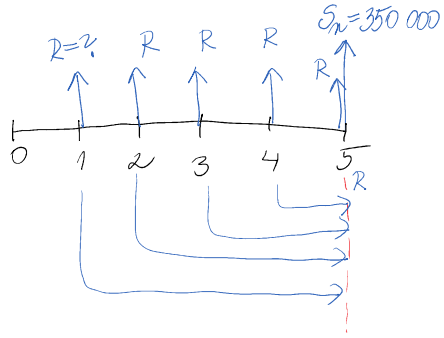
$$FV_n = PV(1+i)^n$$

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

$$= 842{,}47276 \cdot (1+906)^5 =$$

$$= 1\,127{,}41859$$

PR 4



$S_5 = 350\,000$
$n = 5$
$i = 0{,}11$
$p = 1$
$m = 1$
$R = ?$

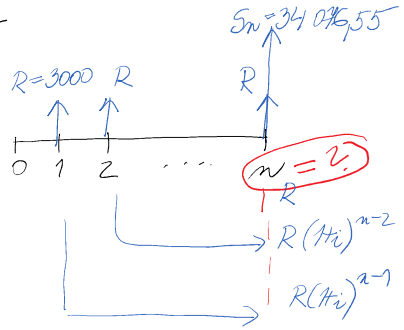
$$S_n = R \frac{(1+i)^n - 1}{i}$$

$$350\,000 = R \frac{(1+0{,}11)^5 - 1}{0{,}11} \Big/ \cdot \frac{0{,}11}{(1+0{,}11)^5 - 1}$$

$$R = 350\,000 \cdot \frac{0{,}11}{(1+0{,}11)^5 - 1}$$

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

PR 5



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

$R = 3000$

$i = 0{,}028$

$k = 1$

$m = 1$

$n = ?$

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

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

$$1{,}028^n - 1 = 34\,076{,}55 \cdot \frac{0{,}028}{3\,000} \quad / +1$$

$$1{,}028^n = 34\,076{,}55 \cdot \frac{0{,}028}{3\,000} + 1 \quad / \ln(\,)$$

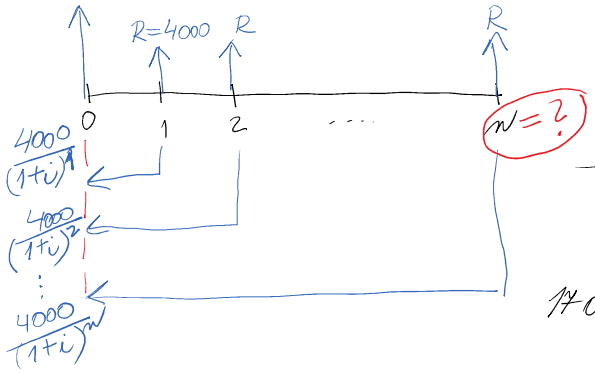
$$\ln 1{,}028^n = \ln\left(34\,076{,}55\,\frac{0{,}028}{3\,000} + 1\right) \quad / : \ln 1{,}028$$

$$n \cdot \ln 1{,}028 = \ln\left(34\,076{,}55\,\frac{0{,}028}{3\,000} + 1\right)$$

$$n = \frac{\ln\left(34\,076{,}55\,\frac{0{,}028}{3\,000} + 1\right)}{\ln 1{,}028}$$

$$n = 10$$

PR 6 $A_n = 17\,000$



$A_n = 17\,000$

$R = 4000$

$i = 0{,}04$

$k = 1$

$m = 1$

$n = ?$

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

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

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

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

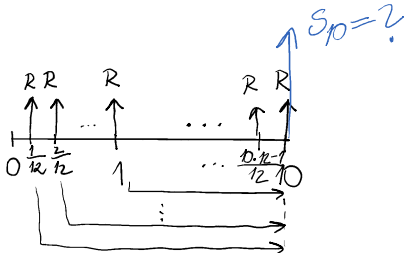
$$\ln 1{,}04^{-n} = \ln\left(1 - 17\,000\,\frac{0{,}04}{4000}\right) \quad / \cdot\left(\frac{-1}{\ln 1{,}04}\right)$$

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

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

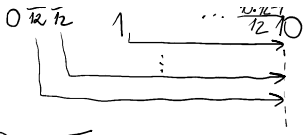
$$n = 4{,}75$$

PR 8.



$$S_n = R\,\frac{\left(1+\frac{i}{m}\right)^{mn} - 1}{\left(1+\frac{i}{m}\right)^{\frac{m}{p}} - 1}$$

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

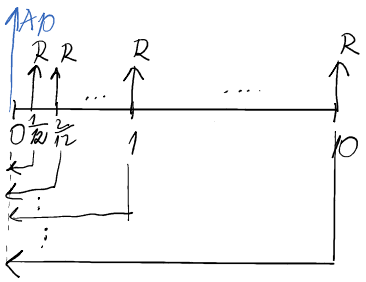


$R = 15$
$j = 0{,}1$
$p = 12$
$m = 4$
$n = 10$
$S_{10} = ?$

$$S_{10} = 15 \cdot \frac{\left(1+\frac{0{,}1}{4}\right)^{4\cdot 10} - 1}{\left(1+\frac{0{,}1}{4}\right)^{\frac{4}{12}} - 1} =$$

$$= 3058{,}25217;$$

PR 9.



$A_{10} = 3058{,}25217$
$j = 0{,}1$
$p = 12$
$m = 4$
$n = 10$
$R = ?$

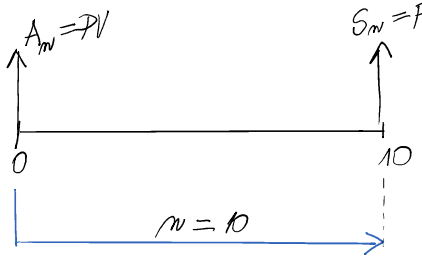
$$A_n = R \cdot \frac{1-(1+j_m)^{-m\cdot n}}{(1+j_m)^{\frac{m}{p}} - 1}$$

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

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

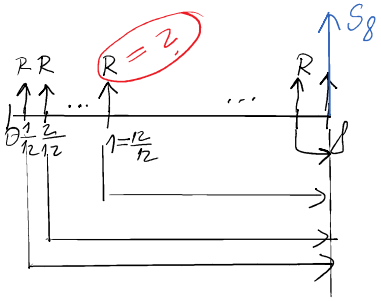
$$R = 40{,}27596;$$

PR 10



$$FV_n = PV\left(1+j_m\right)^{m\cdot n}$$
$$S_n = A_n\left(1+j_m\right)^{m\cdot n}$$
$$S_{10} = 3058{,}25217 \cdot \left(1+\frac{0{,}1}{2}\right)^{2\cdot 10} =$$
$$= 8114{,}45346;$$

PR 11



$S_8 = 13204{,}61$
$n = 8$
$j = 0{,}034$
$p = 12$
$m = 2$
$R = ?$

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

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

$$\frac{1{,}017^{\frac{1}{6}} - 1}{1{,}017^{16} - 1}$$

$$R = 13204{,}61 \cdot \frac{\left(1+\frac{0{,}034}{2}\right)^{\frac{1}{6}} - 1}{\left(1+\frac{0{,}034}{2}\right)^{16} - 1} =$$

($1+\frac{0{,}034}{2} = 1{,}017$)

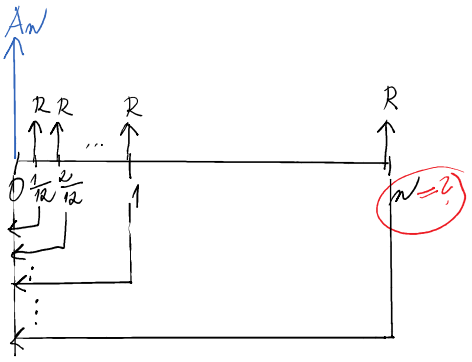
$$= 120;$$

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

PR 12 A_n

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

PR 12



$A_N = 20\,000$
$R = 200$
$j = 0{,}015$
$p = 12$
$m = 12$
$n = ?$

$$A_N = R \cdot \frac{1-(1+\frac{j}{m})^{-mn}}{(1+\frac{j}{m})^{\frac{m}{p}}-1} \quad (m=p) \quad = R\,\frac{1-(1+\frac{j}{m})^{-n}}{\frac{j}{m}} \;!$$

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

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

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

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

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

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

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

$$n = 19$$