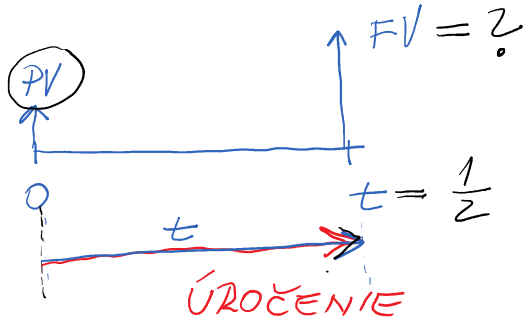
Jednoduché úrokovanie, matematický a obchodný diskont, zmenky

streda 12. februára 2025 10:00

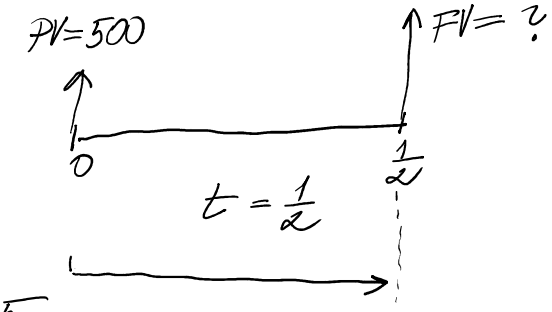
JEDNODUCHÉ ÚROKOVANIE

$$FV = PV(1+it)$$



PR: $PV = 500$, $i = 0{,}05$, $t = \frac{1}{2}$, $FV = ?$

$$FV = PV(1+it) = 500\left(1+0{,}05\cdot\frac{1}{2}\right) = 512{,}5$$



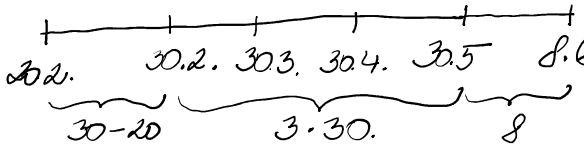
$$\left(I = FV - PV = 12{,}5\right)$$

PR $20.2.2012 \rightarrow 8.6.2012$, $PV = 500$, $i = 0{,}06$, $I = ?$

! $I = PV \cdot i \cdot t$

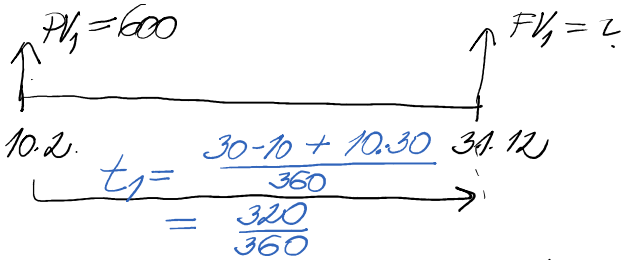
$$I = 500 \cdot 0{,}06 \cdot \frac{108}{360} = 9$$

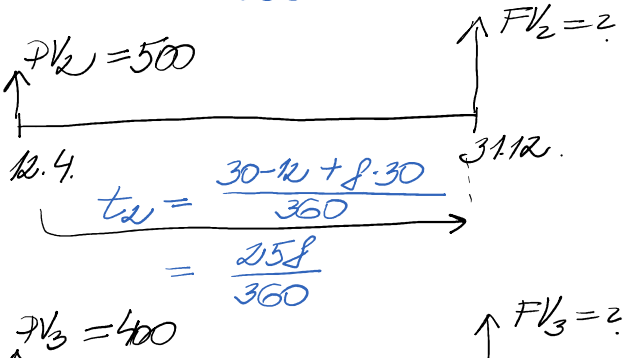
NEMECKÝ ŠTANDARD



$$t_1 = \frac{30-20+3\cdot 30+8}{360} = \frac{108}{360}$$

PR $PV_1 = 600$ $10.2. \rightarrow 31.12.$; $PV_2 = 500$ $12.4. \rightarrow 31.12.$; $PV_3 = 400$ $16.6. \rightarrow 31.12.$, $i = 0{,}03$, $I = ?$, $FV = ?$





! $FV = FV_1 + FV_2 + FV_3$

$PV = PV_1 + PV_2 + PV_3$

$I = FV - PV$

$$FV = PV(1+it)$$

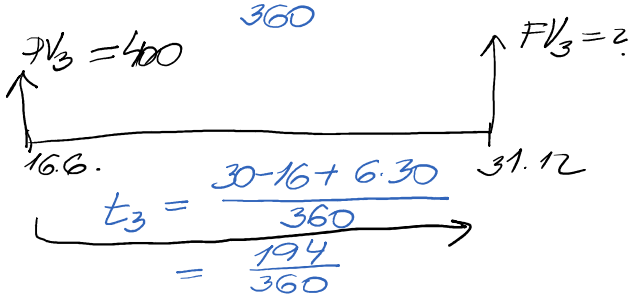
$= \frac{\dots}{360}$

$FV = PV(1+it)$

$FV_1 = 600\left(1+0{,}03\cdot\frac{320}{360}\right) = 616$

$FV_2 = 500\left(1+0{,}03\cdot\frac{258}{360}\right) = 510{,}75$

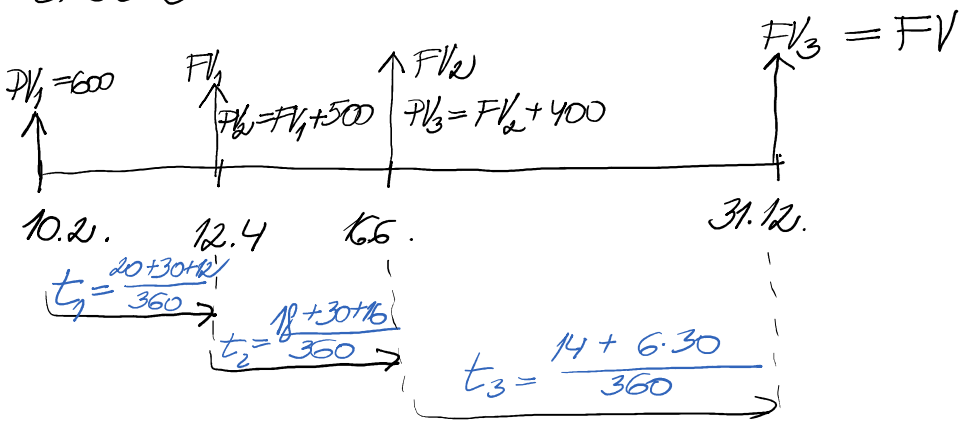
$FV_3 = 400\left(1+0{,}03\cdot\frac{194}{360}\right) = 406{,}47$



$FV = 616 + 510{,}75 + 406{,}47 = \underline{1533{,}22}$

$I = FV - PV = 1533{,}22 - (600+500+400) = \underline{33{,}22}$

INÝ SPÔSOB RIEŠENIA



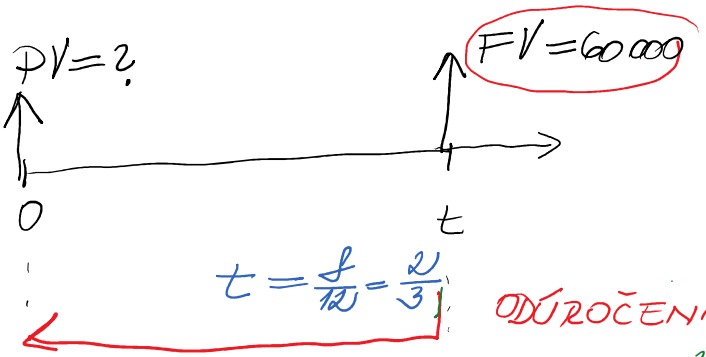
VÝPOČET SÚČASNEJ HODNOTY = ODÚROČENIE

$FV = PV(1+it) \longrightarrow PV = \frac{FV}{1+it}$

PR. $FV = 60\ 000$
$i = 0{,}06$
$t = \frac{8}{12} = \frac{2}{3}$

$PV = ?$

$PV = \frac{FV}{1+it}$

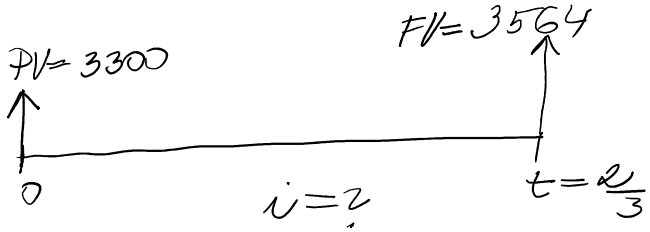


$PV = \frac{60\ 000}{1+0{,}06\cdot\frac{2}{3}} = \underline{57\ 692{,}308}$, $\left(= \underbrace{60\ 000}_{FV} - I = 2307{,}692\right)$

VÝPOČET ÚROKOVEJ MIERY

FV = 3564

PR. $PV = 3\,300$
$FV = 3\,564$
$t = \frac{8}{12} = \frac{2}{3}$
$i = ?$



$FV = PV(1+it)$

$3564 = 3300\left(1+i\cdot\frac{2}{3}\right) \quad /:3300$

$\frac{3564}{3300} = 1+i\cdot\frac{2}{3} \quad /-1$

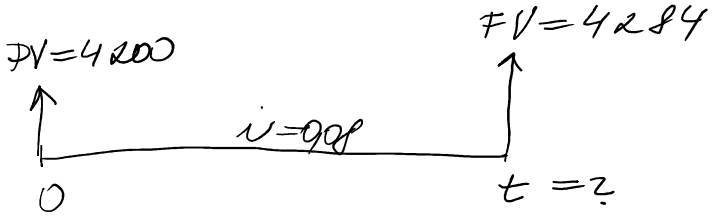
$\frac{2}{3}i = \frac{3\,564}{3\,300} - 1 \quad /\cdot\frac{3}{2} \quad (:\frac{2}{3})$

$i = \left(\frac{3\,564}{3300} - 1\right)\cdot\frac{3}{2} = 0{,}12$

$i\cdot 100\,\% = 0{,}12\cdot 100\,\% = 12\,\%$

VÝPOČET ÚROKOVÉHO OBDOBIA

PR $PV = 4\,200$
$FV = 4\,284$
$i = 9\,\%$
$t = ?$ (mesiace)



$FV = PV(1+it)$

$4284 = 4\,200\,(1+0{,}09t) \quad /:4200$

$\frac{4284}{4200} = 1+0{,}09t \quad /-1$

$0{,}09t = \frac{4284}{4200} - 1 \quad /:0{,}09 \quad (=\cdot\frac{100}{9})$ (9/100)

$t = \left(\frac{4284}{4200} - 1\right)\cdot\frac{100}{9} = 0{,}25$

počet mesiacov: $0{,}25\cdot 12 = 3$ mesiace

MATEMATICKÝ DISKONT

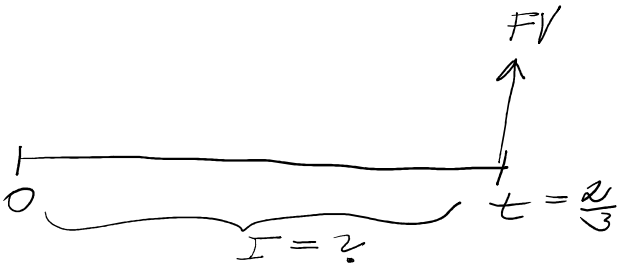
$D_m = \frac{FV\cdot i\cdot t}{1+i\cdot t}$ $(=I)$ $I = PV\,i\cdot t$

$PV = \frac{FV}{1+it}$

PR. $FV = 60\,000$
$i = 0{,}06$

FV

PR. $FV = 60\,000$
$i = 0{,}06$
$t = \frac{8}{12} = \frac{2}{3}$
$D_m = ?$



$$D_m = \frac{FV \cdot it}{1+it} = \frac{60000 \cdot 0{,}06 \cdot \frac{2}{3}}{1+0{,}06 \cdot \frac{2}{3}} = 2\,304{,}69\,\text{€}$$

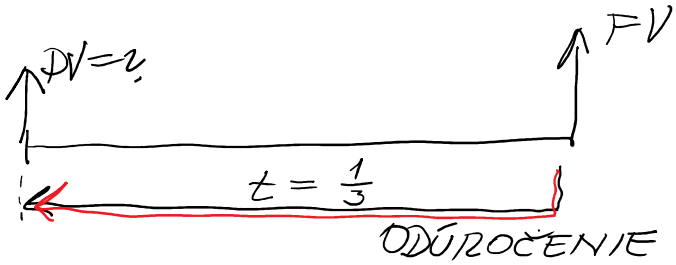
OBCHODNÝ DISKONT

$D_o = FV \cdot it$ $\qquad PV = FV(1-t \cdot d)$

PR: $FV = 15\,000$
$d = 0{,}2$
$t = \frac{4}{12} = \frac{1}{3}$
$PV = ?$

$PV = FV(1-t \cdot d) =$
$= 15\,000\,(1-\frac{1}{3} \cdot 0{,}2) = 14\,000$

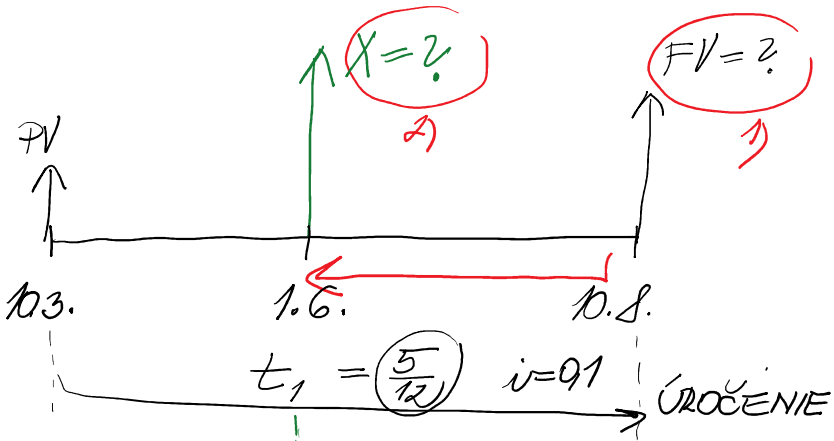
ODÚROČENIE DISKONTOVANÍM



$(D_o = FV - PV = 1000)$

ZMENKY

PR. $PV = 10\,000$
$i = 0{,}1$
$d = 0{,}12$
$t_1 = \frac{5}{12}$
$t_2 = \frac{69}{360}$
$X = ?$



1) $FV = PV(1+it_1)$
$FV = 10\,000(1+0{,}1 \cdot \frac{5}{12}) = 10\,416{,}667$

2) $PV = FV(1-td)$
$X = FV(1-t_2 d) =$
$= 10\,416{,}667\,(1-\frac{69}{360} \cdot 0{,}12) = 10\,177{,}083$

ODÚROČUJEME DISKONTOVANÍM

c) $X = FV(1 - t_2 d) =$

$= 10\,416{,}667\left(1 - \frac{69}{360} \cdot 0{,}12\right) = 10\,177{,}083$

DISKONTOVANÍM