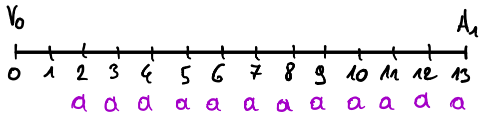
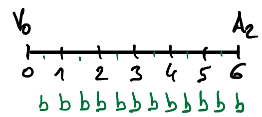
①



②



① $A_1 = a + (1+i)a + (1+i)^2 a + \dots + (1+i)^{11} a$

$$= a\underbrace{\left[1+(1+i)+(1+i)^2+\dots+(1+i)^{11}\right]}_{S = \frac{lq-a}{q-1} = \frac{(1+i)^{11}(1+i)-1}{(1+i)-1}}$$

$$A_1 = a\frac{(1+i)^{12}-1}{i} \rightarrow V_0 = (1+i)^{-13}A_1 \Leftrightarrow \boxed{V_0 = (1+i)^{-13}\, a\, \frac{(1+i)^{12}-1}{i} \text{ (eq.1)}}$$

$$= 1.06^{-13}\cdot 10000 \cdot \frac{1.06^{12}-1}{0.06}$$

$$= 79092{,}87\,€$$

② $A_2 = b + (1+i_s)b + (1+i_s)^2 b + \dots + (1+i_s)^{11} b$

$$= b\underbrace{\left[1+(1+i_s)+\dots+(1+i_s)^{11}\right]}_{S = \frac{lq-a}{q-1}}$$

$$A_2 = b\,\frac{(1+i_s)^{12}-1}{i_s} \rightarrow V_0 = (1+i_s)^{-11}A_2 \Leftrightarrow \boxed{V_0 = (1+i_s)^{-11}\, b\, \frac{(1+i_s)^{12}-1}{i_s} \text{ (eq.2)}}$$

Maintenant il faut trouver le taux d'équivalence :

$$1+0.06 = (1+i_s)^2 \Leftrightarrow \boxed{i_s = \sqrt{1+0{,}06}-1}$$

En combinant (eq.1) et (eq.2) :

$$(1+i)^{-13}\, a\, \frac{(1+i)^{12}-1}{i} = (1+i_s)^{-11}\, b\, \frac{(1+i_s)^{12}-1}{i_s}$$

$$\cancel{b = \frac{a[(1+i)^{12}-1](1+i_s)^{11}\, i_s}{(1+i)^{13}\, i\, [(1+i_s)^{12}-1]}}$$

$$\cancel{= a\,\frac{(1+i_s)^{11}}{(1+i)^{13}}\cdot\frac{i_s}{i}\cdot\frac{(1+i)^{12}-1}{(1+i_s)^{12}-1}}$$

$$\cancel{= \dots}$$

$$\cancel{b = 5752{,}06\,€}$$

$$79092{,}87 = (1+i_s)^{-11}\, b\, \frac{(1+i_s)^{12}-1}{i_s}$$

$$b = 79092{,}87\cdot(1+i_s)^{11}\cdot\frac{i_s}{(1+i_s)^{12}-1}$$

$$= 7697{,}56\,€$$