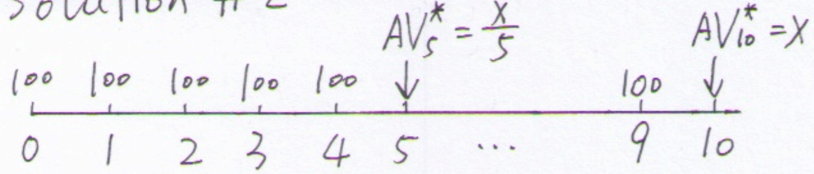
Solution #2



Total number of payment = 10
4-year effective interest = i^*

$$AV_5^* = \frac{X}{5} \qquad AV_{10}^* = X$$

$$\Rightarrow AV_{10}^* = 5AV_5^*$$

$$AV_{10}^* = 100\ddot{s}_{\overline{10}|i^*} \qquad AV_5^* = 100\ddot{s}_{\overline{5}|i^*}$$

$$= 100 \cdot \frac{(1+i^*)^{10}-1}{d^*} \qquad = 100 \cdot \frac{(1+i^*)^5-1}{d^*}$$

$$AV_{10}^* = 5AV_5^*$$

becomes. $\cancel{100} \cdot \frac{(1+i^*)^{10}-1}{\cancel{d^*}} = 5 \cdot \cancel{100} \cdot \frac{(1+i^*)^5-1}{\cancel{d^*}}$

$$(1+i^*)^{10}-1 = 5 \cdot \left[(1+i^*)^5-1\right] \quad \ldots\ldots \; x^2-y^2=(x+y)(x-y)$$

$$\left[(1+i^*)^5+1\right]\cancel{\left[(1+i^*)^5-1\right]} = 5 \cdot \cancel{\left[(1+i^*)^5-1\right]}$$

$$(1+i^*)^5+1 = 5$$

$$(1+i^*)^5 = 4$$

$$1+i^* = \sqrt[5]{4}$$

$$i^* = \sqrt[5]{4}-1$$

$$AV_{10}^* = 100\ddot{s}_{\overline{10}|i^*} = 100 \cdot \frac{(1+i^*)^{10}-1}{d^*}$$

$$= 100 \cdot \frac{(1+i^*)^{10}-1}{\left(\frac{i^*}{1+i^*}\right)}$$

$$= 100 \cdot \frac{(1+\sqrt[5]{4}-1)^{10}-1}{\left(\frac{\sqrt[5]{4}-1}{1+\sqrt[5]{4}-1}\right)}$$

$$= 100 \cdot (61.9472) \approx 6195 \qquad E$$