MLC #168

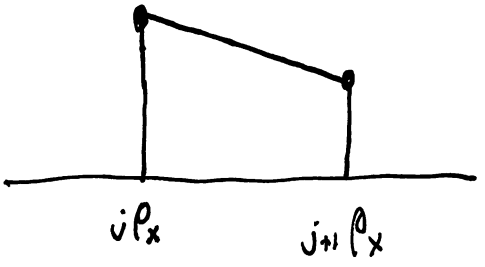
$l_{81} = 1000 - 90 = 910$

$l_{82} = 920 - 90 = 830$

$$\mathring{e}_x = \int_0^+ {}_+p_x \, dt \qquad e_x = \sum_{k=0}^{\infty} k p_x$$

$$\mathring{e}_x = \sum_{j=0}^{\infty} \int_j^{j+1} {}_+p_x \, dt$$

$$= \sum_{j=0}^{\infty} \tfrac{1}{2}({}_j p_x + {}_{j+1} p_x)$$



$$= \tfrac{1}{2}\left[(1 + p_x) + (p_x + {}_2p_x) + ({}_2p_x + {}_3p_x) + \dots\right]$$

$$= \tfrac{1}{2} + p_x + {}_2p_x + \dots \rightarrow \mathring{e}_x = e_x + \tfrac{1}{2}$$

$$e_x = p_x + {}_2p_x + {}_3p_x + \dots$$

$$= p_x(1 + p_{x+1} + {}_2p_{x+1} + \dots)$$

$$= p_x(1 + e_x)$$

$e_{[81]} = 8.5 - 0.5 = 8$

$$e_{[81]} = p_{[81]}(1 + e_{82})$$

$$e_{[80]} = p_{[80]}(1 + e_{81}) \rightarrow e_{[80]} = p_{[80]}(1 + p_{81} + p_{81} e_{82})$$

$$e_{81} = p_{81}(1 + e_{82})$$

$$e_{[80]} = \frac{l_{81}}{l_{[80]}}\left(1 + \frac{l_{82}}{l_{81}} + \frac{l_{82}}{l_{81}}\, e_{82}\right) \qquad e_{[81]} = \frac{l_{82}}{l_{[81]}}\left(1 + e_{82}\right)$$

$$8 = \frac{910}{1000}\left(1 + \frac{830}{910} + \frac{830}{910}\, e_{82}\right)$$

$$e_{82} = 7.54217$$

$$e_{[81]} = \frac{830}{920}(1 + 7.54217)$$

$$= 7.70652$$

$$\mathring{e}_{[81]} = 7.70652 + 0.5 \approx 8.20652$$

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