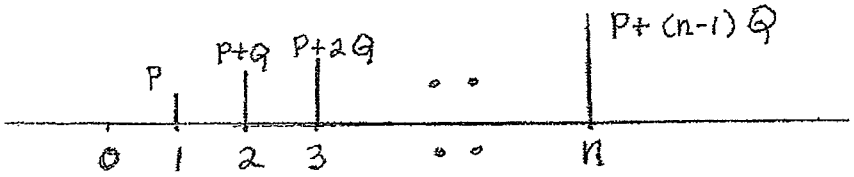
Some Chapter 4 Formulas

One paid continuously over each conversion period. $\delta = \ln(1+i)$

n = # of conv. periods

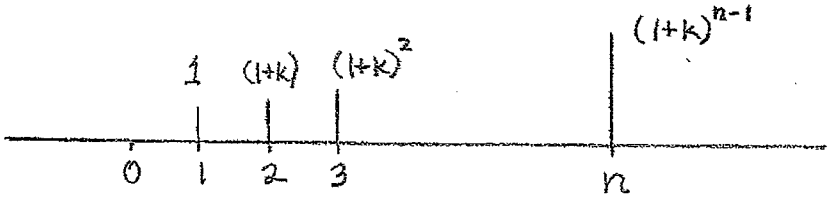
$$\bar{a}_{\overline{n}|} = PV_0 = \frac{1-v^n}{\delta} = \frac{1-e^{-n\delta}}{\delta} \qquad \bar{s}_{\overline{n}|} = \frac{e^{n\delta}-1}{\delta}$$

$$\bar{a}_{\overline{\infty}|} = \frac{1}{\delta}$$



$$PV_0 = P(a_{\overline{n}|}) + Q\left(\frac{a_{\overline{n}|} - nv^n}{i}\right)$$

$$PV_{perp.} = P\left(\frac{1}{i}\right) + Q\left(\frac{1}{i^2}\right)$$



$$PV_0 = \frac{1-\left(\frac{1+k}{1+i}\right)^n}{(i-k)} \qquad i > k$$

$$PV_{perp} = \frac{1}{i-k}$$

Continuous Payment

$f(t)$ smear of payment $\qquad a(t)$ accumulation function

$$PV_0 = \int_0^n f(t)\frac{1}{a(t)}\,dt \qquad Value(t_0) = a(t_0)PV_0$$

$$= \int_0^n f(t)\,e^{-\int_0^t \delta_r\,dr}\,dt \qquad = e^{\int_0^{t_0}\delta_r\,dr} PV_0$$