

## Review for 10-04-2016

More Generally Varying Annuities:

Continuous Annuities:

Stream of Payment described by  $f(t)$

Force of Interest described by  $\delta_t$

$$a(t) = e^{-\int_0^t \delta_r dr}$$

$$PV = \int_0^n f(t) \frac{1}{a(t)} dt$$

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

$$= \int_0^n f(t) e^{-\delta t} dt \quad \text{with constant force of interest}$$

$$L = \text{loan amt.} = (Pmt) a_{\overline{n}|i} \quad i \text{ effective rate per payment period}$$

Amortization Method

Generic Loan  $\rightarrow$   $Pmt = 1$   $n$  payments

$$L = a_{\overline{n}|i}$$

Outstanding loan balance just after  $t^{\text{th}}$  pmt:

$$a_{\overline{n-t}|i}$$

Amount of interest in  $t^{\text{th}}$  payment

$$1 - v^{n+1-t}$$

Amount toward principal in  $t^{\text{th}}$  payment

$$v^{n+1-t}$$