Exercise 5.1

(a) Y_1 is the present value random variable for a 15-year term life annuity to (x) of \$1 payable continuously. Its APV can be expressed as

$$\mathrm{E}[Y_1] = \bar{a}_{x:\overline{15|}}$$

(b) Y_2 is the present value random variable for a life annuity-immediate to (x) with a 15-year guarantee. Its APV can be expressed as

$$\mathrm{E}[Y_1] = a_{\overline{x:\overline{15|}}}$$