

Show all work for full credit, use correct notation., and clearly mark your answer.

1. You are given:

(i) $\bar{a}_x = 8$

(ii) $\bar{a}_y = 10$

(iii) $\bar{A}_{xy} = 0.8$

(iv) $\delta = 0.05$

Determine $\bar{A}_{\overline{xy}}$.

2. You are given:

(i) $A^1_{x:\overline{n}|} = 0.125$

(ii) ${}_nE_x = 0.7$

(iii) $i = 0.04$

Determine $\ddot{a}_{x:\overline{n}|}$

3. You are given:

(i) $\ddot{a}_{x:\overline{20}|}^{(4)} = 16.5$

(ii) ${}_{20}p_x = 0.6$

(iii) $d = 0.04$

Determine $A_{x:\overline{20}|}^{1(4)}$

4. You are given:

(i) $1000 {}_{10}E_x = 507$

(ii) $1000 {}_{20}E_{x+10} = 139$

(iii) $\ddot{a}_x = 13.08$

(iv) $\ddot{a}_{x+30} = 5.65$

(v) $i = 0.06$

Determine $\ddot{s}_{x:\overline{30}|}$.

5. For a whole life annuity due with annual payments of 1000 issued to (x) , you are given:

(i) Y denotes the present value random variable for this annuity

(ii) ${}^2A_x = 0.052$

(iii) $A_x = 0.169$

(iv) $i = 0.05$

Determine $Var(Y)$.