Illustrative example

Suppose that the future lifetimes, T_x and T_y, of a husband and wife, respectively are independent and each is uniformly distributed on $[0, 50]$. Assume $\delta = 5\%$.

1. A special insurance pays \$1 upon the death of the husband, provided that he dies first. Calculate the actuarial present value for this insurance and the variance of the present value.

2. An insurance pays \$1 at the moment of the husband's death if he dies first and \$2 if he dies after his wife. Calculate the APV of the benefit for this insurance.

3. An insurance pays \$1 at the moment of the husband's death if he dies first and \$2 at the moment of the wife's death if she dies after her husband. Calculate the APV of the benefit for this insurance.