

Example: A temporary discrete life annuity-due of 1 is payable to (x) as long as (x) lives jointly with (y) , and for 10 years after the death of (y) , provided (x) is still alive. In no event will payments be made after 20 years. You are given:

$$\text{i) } \ddot{a}_x = 15 \quad \text{ii) } {}_{10|}\ddot{a}_x = 8 \quad \text{iii) } \ddot{a}_y = 16$$

$$\text{iv) } \ddot{a}_{y:\overline{10}|} = 7 \quad \text{v) } \ddot{a}_{\overline{y:y}:\overline{10}|} = 8 \quad \text{vi) } (y) \text{ is 10 years older than } (x)$$

vii) (x) and (y) are independent lives.

Calculate the actuarial present value of this annuity.

Example: A fully continuous last survivor whole life insurance policy pays \$10,000 at the instant of the second death of (x) and (y) . Benefit premiums are payable as long as both survive, with the premiums halving after the first death.

Both lives are subject to a constant force of mortality, with (x) subject to a constant force of 0.04 and (y) subject to a constant force of 0.06.

If $\delta = 0.02$, find the initial rate of annual premium.