A special whole life insurance of 100,000 payable at the moment of death of (40) includes a
double indemnity rider. This provision pays during the first ten years an additional benefit of
100,000 at the moment of death for death by accidental means (decrement J=1). You are given:
\( \mu_40^{(1)}(t) = 0.0002 \) for \( t \geq 0 \), \( \mu_40^{(a)}(t) = 0.001 \) for \( t \geq 0 \), and \( \delta = 0.06 \).

1. (5 pts.) For the policy without the rider the level benefit premium \( \pi_1 \) is payable for life.
   For the policy with the rider an extra benefit premium \( \pi_2 \) in addition to \( \pi_1 \) is charged
   for the extra benefit for death by accidental means until age 50. Calculate the benefit
   premiums for the insurance with the rider.

2. (5 pts.) The benefit premiums are determined as above. Find the benefit reserve for the
   insurance with the rider at the end of year 2.