Please return this page with your signature. Please write your name and student number at the spaces provided:

Name: _____   **Student ID:** _____

I certify that this is my own work, and that I have not copied the work of another student.

Signature: _____   **Date:** _____

For a whole life insurance of a benefit of 10 on (x) payable at the moment of death, you are given:

$$\mu_{x+t} = \begin{cases} 0.001, & \text{for } 0 < t \le 20 \\ 0.002, & \text{for } t > 20 \end{cases}$$

and

$$\delta_t = \begin{cases} 0.04, & \text{for } 0 < t \le 10 \\ 0.05, & \text{for } t > 10 \end{cases}.$$

1. (1 point) Express the Present Value random variable for this life insurance (note the benefit is equal to 10). You may write this as the random variable Z.

2. (4 points) Calculate the Actuarial Present Value (APV) of the benefit for this insurance.

3. (5 points) Calculate the variance of Z.