

MATH 3630 - Actuarial Mathematics I
Fall 2008 - Valdez
Homework No. 3
due Wednesday, 6:50 PM, October 8, 2008

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 1,000 on (x) payable at the moment of death, you are given:

$$\mu_{x+t} = \begin{cases} 0.004, & \text{for } 0 < t \leq 10 \\ 0.005, & \text{for } t > 10 \end{cases}$$

and

$$\delta_t = \begin{cases} 0.03, & \text{for } 0 < t \leq 20 \\ 0.02, & \text{for } t > 20 \end{cases} .$$

1. (1 point) Express the Present Value random variable for this life insurance (note the benefit is 1,000). 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 .