MATH 3630 - Actuarial Mathematics I
Fall 2011 - Valdez
Homework No. 3
due Wednesday, 5:00 PM, 19 October 2011

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.

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You are given that for a whole life insurance issued to (x) that pays \$100 at the moment of death:

- The actuarial present value of the policy is \$60.00 based on a constant force of mortality μ and a constant force of interest equal to 0.02.
- The actuarial present value of the policy is \$63.64 based on a constant force of mortality $\mu + c$ and a constant force of interest equal to 0.02.

1. Determine the values of μ and c.
2. Calculate the actuarial present value of the policy based on a constant force of mortality μ and a constant force of interest $0.02 + c$, where μ and c are the constants determined in 1.
3. Calculate the actuarial present value of the policy based on the force of mortality

$$\mu_{x+t} = \begin{cases} \mu, & \text{for } 0 < t \leq 15 \\ \mu + c, & \text{for } t > 15 \end{cases}$$

and the force of interest

$$\delta_t = \begin{cases} 0.02 + c, & 0 < t \leq 15 \\ 0.02, & \text{for } t > 15 \end{cases},$$

where μ and c are the constants determined in 1.