

**MATH 3631 - Actuarial Mathematics II**  
**Spring 2018 - Valdez**  
**Quiz No. 6**  
**Monday, 9 April 2018**

Name: EMIL

Student ID: Suggested Solution

For an insurance policy issued to (45), you are given:

- The policy will pay 100,000 at the moment of death.
- It will pay an additional amount of 100,000 at the moment of death if death is accidental and occurs within the next 20 years.
- The force of accidental death is 0.02 at all ages.
- The force of death for all other causes is 0.06 at all ages.
- $\delta = 0.05$ .

Calculate the actuarial present value for this policy.

$$\begin{aligned} \text{APV}(\text{policy}) &= 100,000 \int_0^{\infty} e^{-0.05t} e^{-0.08t} (0.08) dt \\ &\quad + 100,000 \int_0^{20} e^{-0.05t} e^{-0.08t} (0.02) dt \\ &= 100,000 \frac{0.08}{0.13} + 100,000 \frac{(0.02)}{0.13} (1 - e^{-20(0.13)}) \\ &= \underline{\underline{75,780.41}} \end{aligned}$$