MATH 3631 - Actuarial Mathematics II
Spring 2018 - Valdez
Quiz No. 1
Wednesday, 24 January 2018

Name: EMIL **Student ID:** Suggested Solution

For a special increasing whole life insurance on (x), you are given:

- Death benefit, payable at the end of the year of death, consists of
  - (i) 1 for death in the first year, 2 for death in the second year, and increasing by 1 thereafter, plus
  - (ii) the return of all premiums paid without interest.
- Annual net premium of P is payable at the beginning of each year.
- $A_x = 0.23$
- $(IA)_x = 10.90$
- $i = 0.03$

Calculate P.

Set $APV(FP_0) = APV(FB_0)$

$$P\ddot{a}_x = (IA)_x + P(IA)_x$$

(return of premiums)

$$P = \frac{(IA)_x}{\ddot{a}_x - (IA)_x} \qquad (IA)_x = 10.9$$

$$\frac{1 - A_x}{d} = \frac{1 - 0.23}{.03/1.03} = 26.43667$$

$$= \frac{10.9}{26.43667 - 10.9} = 0.7015662$$