Chapters 5 & 6 – Past Test and Quiz Problems – Annuity Immediate Adjustments

(4 points) You are given:

i. $a_{50} = 10$

ii. $i = 0.05$

iii. $q_{50} = 0.01$

iv. Deaths are uniformly distributed between integral ages.

You have 15,216.73 to purchase an annuity. Let P be the annual annuity payment for a whole life annuity due for **(51)**.

Determine P.

Solution:

$$15,216.73 = P\ddot{a}_{51}$$

$$\ddot{a}_{50} = a_{50} + 1$$

$$\ddot{a}_{50} = 1 + vp_{50}\ddot{a}_{51} \Longrightarrow \ddot{a}_{51} = \frac{\ddot{a}_{50} - 1}{vp_{50}} = \frac{11 - 1}{(1.05)^{-1}(1 - 0.01)} = 10.6060606$$

$$P = \frac{(15,216.73)}{10.6060606} = 1434.72$$