EXAM FM QUESTIONS OF THE WEEK

S. Broverman, 2006

Week of June 26/06

Smith has $100,000 to invest. He buys two annuities.

The first annuity will be a 10 year annuity-immediate with level annual payments of X.

The interest rate on the first annuity is an effective annual rate of interest of 8%.

The second annuity is a 10 year annuity-due with monthly payments of $\frac{Y}{12}$ per month.

The interest rate on the second annuity is a nominal annual rate of interest of 8% compounded monthly. The total amount to be paid out under the two annuities is $147,000.

Find the total amount paid out under the first annuity

The solution can be found below.

Week of June 26/06 - Solution

$$100,000 = X a_{\overline{10}|.08} + \frac{Y}{12} \cdot \ddot{a}_{\overline{120}|.006667} = 6.7101X + 6.9141Y .$$

We are given that $10(X + Y) = 147,000$.

The first equation can be written as $6.7101X + 6.9141(\frac{147,000}{10} - X) = 100,000$.

Solving for X results in $X = 8025.83$.

The total paid out by the first annuity is $10X = 80,258$.