Question 2:

Below we can see the final result of the investment optimization:



My model seeks to minimize:

Where savings investment is the present value total over all the 14 years.

The only constraint is that the total left over capital does not go below 0. This would mean that we cannot pay the pension. The formula for this is where i is any given year.

After implementing this constraint and the cell calculations, we run the model and see that we need 201.28 \* 1000 dollars today to pay off the pension’s full value.

The model is able to adjust the savings invested per year, the initial savings, and the number of each type of bonds we can purchase. After running the minimization function, we can see that 12.8, 25.1, and 28.8 of bonds 1, 2, and 3 are purchased respectively.