Introduction to Finance

Quiz 3 *November 12, 2019*

1. Consider a standard 30-year, fixed-rate mortgage with monthly payments and interest rate of 4.5%, with \$300,000 principal.

   (a) (**10 points**) What is the equivalent annual yield on this mortgage?

   (b) (**25 points**) We can evaluate this annuity using two perpetuities. Explain what these 2 perpetuities are, how we use them to obtain the relevant Annuity Factor for this mortgage, and show the Annuity Factor for this mortgage.

   (c) (**15 points**) What is the size of the monthly payment of this mortgage?

(d) (**25 points**) Show the first two months of the mortgage amortization table–i.e., how much of the first two payments goes to interest, and how much to principal.

2. (**15 points**) Your parents are considering retiring. They would like to purchase an annuity that provides a monthly cash flow of \$5,000 for the next 25 years. The banks that they have spoken with have told them that the current rate on such products is 3%. How much will such an annuity cost?

3. (**10 points**) Suppose that a perpetual government bond which pays \$300 every 6 months (the next payment is in exactly six months) sells for \$9,090.91. What is the bond equivalent (i.e., semi-annually compounded) yield on this perpetual government bond?