Mathematics Elective: Mathematical Finance

Pennsylvania Governor's School for the Sciences 2023

Homework #2

Due: At class time on Tuesday, July 2.

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1. A zero coupon bond with face value $F = \$5000$ and maturity $T = 5$ years makes a single payment of \$5000 at time $t = 5$.

   The present value B_0 of this bond today is $B_0 = \$4300$. What is the interest rate in this case? (Assume monthly compounding.)

2. Consider an annuity that makes payments of $A = \$500$ once per year for two years. (i.e. the annuity pays \$500 at the end of the first year and \$500 at the end of the second year.)

   The present value A_0 of this annuity is $A_0 = \$925$. What is the interest rate in this case? (Assume monthly compounding.)