MATH 102: HOMEWORK 4

DUE DATE: THURSDAY, OCT 24

Note that you need to turn in LaTeXversion of this homework.

Problem 1. In class on Oct 8, we discussed about inflation and present value. In short, if someone gives you F amount of dollars every year and the inflation rate is r, then the present value of N year of this fixed income would be

$$PV = F + \frac{F}{1+r} + \cdots + \frac{F}{(1+r)^N}\,.$$

(1) Use induction to prove that after N year,

$$PV = F\left(\frac{1+r-\frac{1}{(1+r)^N}}{r}\right)$$

(2) Apply this to the situation when $F = \$1$ and $r = 5\%$ (I made a mistake in class about this)

(3) What happen if you were to live forever? How much would you buy a stock if it pays you \$1 per year from now to eternity?

Date: October 8, 2024.