Lecture 4

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1 Todos

- (tentative) Celebration of learning posted next weds due Tuesday 3/28 9am
- hw4 p1 and p2 due Sunday

2 hw4 problem 1

solution in green notebook

3 2.4 Annuity Due & Annuity-Immediate

So far, our focus has been on annuities for which payments occur at the end of the perod, i.e. annuity-immediate. When payments are made at the start of each period, we speak of an annuity-due. In this section, we look at the PV and FV of an annuity due. For an annuity-immediate,
the PV is,

$$a_{\overline{n}|} = \frac{1-v^n}{i}$$

and the FV is,

$$S_{\overline{n}|} = \frac{(1+i)^n-1}{i}$$

Now, let us consider the situation for an annuity due: that is successive payments of 1 are made at the beginning of each period for n periods.

The accumulated value of the series of payments is, GREENBOOK

Now, lets turn our atention to the PV of an annuity due.

$$\ddot{a}_{\overline{n}|i} = 1 + v + \cdots + v^{n-1} = \ddot{a}_{\overline{n}|i} = \frac{1-v^n}{1-v} = \boxed{\ddot{a}_{\overline{n}|i} = \frac{1-v^n}{d}}$$

Remark (CN):

$$\ddot{a}_{\overline{n}|i} = a_{\overline{n}|}(1+i)$$
$$\ddot{S}_{\overline{n}|i} = S_{\overline{n}|}(1+i)$$
$$\ddot{a}_{\overline{n->\infty}|i} = \frac{1}{d} = a_{\overline{n->\infty}|}(1+i) + a_{\overline{n->\infty}|} + 1$$

4 2.4.1: e.g. (hw4 no.2)

Jim began saving for his retirement by making monthly deposits of 200 into a fund earning 6% and missed deposits 60-72. He then continued to make monthly deposits of 200 until December 21, 2009. How much did Jim accumulate in his account including interest on December 21, 2009?

option 1:
Accumulated value of 59 payments + Remaining λ payments