# Math 2FM3, Tutorial 7

Oct 30th, 2015

# Ex 3.2.6

- A loan is amortized by level payments every February 1, plus a smaller final payment. The borrower notices that the interest paid in the February 1, 2004 payment was 103.00, and the interest in the February 1, 2005 payment will be 98.00. The rate of interest on the loan is i=0.08.

- (a) Find the principal repaid in the 2005 payment.

- (b) Find the date and amount of the smaller final payment made one year after the last regular payment.

# Ex 3.2.9

- A person borrows money at $i^{(12)}=0.12$ from Bank A, requiring level payments starting one month later and continuing for a total of 15 years (180 payments). She is allowed to repay the entire balance outstanding at any time provided she also pays a penalty of k% of the outstanding balance at the time of repayment. At the end of 5 years (just after the 60th payment) the borrower decides to repay the remaining balance, and finances the repayment plus penalty with a loan at $i^{(12)}=0.09$ from Bank B. The loan from Bank B requires 10 years of level monthly payments beginning one month later. Find the largest value of k that makes her decision to refinance correct.

# Ex 3.2.12

- Smith wishes to sell his house for 200,000 Jones has 100,000 available for a down payment, and can take a bank loan with monthly payments at $i^{(12)}=0.15$. Smith offers to "take back" the mortgage for 100,000 with monthly payments at $i^{(12)}=0.12$, based on a 25-year amortization period, with a provision that Jones will refinance the outstanding balance of the loan elsewhere after 3 years. Jones accepts Smith's offer. Immediately after the transaction Smith sells the loan to a broker for a price that yields the broker $i^{(12)}=0.15$ over the 3-year period. (The broker becomes entitled to the 3 years of monthly payments as well as the outstanding balance.) What is the net amount that Smith receives for the house?