

IE2111 ISE Principles & Practice II
Assignment #1
Date Due: Tuesday, 4 Feb 2025, 5 pm

Instructions

You may use Excel or any computing tools for your calculations, but you must explain or show relevant formulas or equations in your solution. Submit your completed assignment into the Drop Box outside the ISEM Department Office at E1A-06-25, or to the professor at the end of the lecture.

Question:

Jenny took a 5-year loan of \$100,000 from a bank at a nominal interest rate of 6% per year compounded monthly to renovate her house. The loan is to be repaid with 60 equal end-of-month payments starting exactly one month from now.

- (a) What is the effective monthly interest rate of the loan? (1 mark)
- (b) What is the effective annual interest rate of the loan? (1 mark)
- (c) How much does Jenny need to pay to the bank at the end of every month? (2 marks)
- (d) Suppose that after 3 years from now, Jenny has just made the 36th monthly payment. How much does she still owe the bank? (2 marks)
- (e) Suppose that after 3 years from now, Jenny has just made the 36th monthly payment and has made some money from her investments, she would like to pay back the balance of the loan with just 12 more monthly payments. How much is her new monthly payment assuming that the interest rate does not change? (2 marks)
- (f) Donald also takes a loan of \$100,000 from the bank. Because Donald can only afford to pay **\$1,609** per month, the bank charges him a higher interest rate of 9% per year compounded monthly. How many months are needed for Donald to pay back the loan? (2 marks)