



南方科技大学
SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY

DDL: 14:00 Thursday of the seventh academic week(April 3rd).

The homework contains 2 questions and the score is 100 in total.

1. (50 marks) With the price of gas continuing to rise, you wish to look at cars that get better gas mileage. You narrow down your choices to the following 2012 models: Ford Fiesta, Ford Focus, Chevy Volt, Chevy Cruz, Toyota Camry, Toyota Camry Hybrid, Toyota Prius and Toyota Corolla. Each company has offered you their “best deal” as listed in the following table. You are able to allocate approximately \$500 for a car payment each month up to 60 months, although less time would be preferable. Use dynamical systems to determine which new car you can afford.

2012 Model	Best Deal Price	Cash Down	Interest and Duration
Ford Fiesta	\$14,200	\$500	4.5% APR for 60 months
Ford Focus	\$20,705	\$750	4.38% APR for 60 months
Chevy Volt	\$39,312	\$1,000	3.28% APR for 48 months
Chevy Cruz	\$16,800	\$500	4.4% APR for 60 months
Toyota Camry	\$22,955	\$0	4.8% APR for 60 months
Toyota Camry Hybrid	\$26,500	\$0	3% APR for 48 months
Toyota Corolla	\$16,500	\$900	4.25% APR for 60 months
Toyota Prius	\$19,950	\$1,000	4.3% APR for 60 months

2. (50 marks) You are considering a 30-year mortgage that charges 0.4% interest each month to pay off a \$250,000 mortgage.
 - (a) (25 marks) Determine the monthly payment p that allows the loan to be paid off at 360 months.
 - (b) (25 marks) Now assume that you have been paying the mortgage for 8 years and now have an opportunity to refinance the loan. You have a choice between a 20-year loan at 4% per year with interest charged monthly and a 15-year loan at 3.8% per year with interest charged monthly. Each of the

loans charges a closing cost of \$2,500. Determine the monthly payment p for both the 20-year loan and the 15-year loan. Do you think refinancing is the right thing to do? If so, do you prefer the 20-year or the 15-year option?

Hint: You can reasonably use any AI tools to assist you in completing your homework.

Attention: You should send your project to jzlisustc@gmail.com to keep record.