

S4-1 Redo Problems 5.28 and 5.37 Excel.

S4-2. (Machine) A machine acquired by your company has a useful life of five years. The maintenance and operations (M & O) cost of the machine is \$1,000/month in the first year. In the next four years, the cost will increase by 10% per year (which kicks in the first month of each year). Your company MARR is 12% per year compounded monthly. What is the present worth of the machine's M&O costs?

S4-3. Antoon, an exuberant young engineer, is considering buying a new apartment similar to the one he is currently renting. He received an offer from his bank to finance the new apartment purchase. The bank will pay the apartment price of \$45,500. In exchange, Antoon will pay the bank back in yearly installments for 20 years. He will pay \$5,040/year for the first 10 years, and \$2400/year for the following 10 years. His current rent is \$2,520/year. He expects that rent will increase by 10% every 5 years for the next 20 years. Antoon's MARR is 3% per year (this is the interest he can earn from a saving account).

a) What should Antoon do (buy or continue renting) to maximize his wealth over the next 20 years? Assume that the new apartment will lose 30% of its \$45,500 market value after 20 years.

b) What would you do if you were in Antoon's shoes? Elaborate on your answer with no more than few sentences.

S4-4. The Lebanese Ministry of Transportation is considering three contracts to maintain the runways in Beirut airport. Details cash flows for the three alternatives (A, B and C) are shown below. Maintenance contracts A and B are expected to be renewed every time after they expire, at approximately the same costs and salvage values, over the foreseeable future.

	A	B	C
Initial Cost	\$100,000	\$440,000	\$400,000
Annual Cost per Year	\$30,000	\$20,000	\$0
Extra Repair Cost every 10 years	\$0	\$0	\$50,000
Extra costs every 2 years	\$4,000	\$0	\$4,000
Salvage Value	\$8,000	\$30,000	\$0
Life Cycle (in years)	4	20	∞

If the ministry must choose one of the above three alternatives, which alternative do you advise? The interest rate is 12% per year, compounded monthly?