

King Fahd University of Petroleum & Minerals
Department of Math and Stat
Math 131 Semester 141 - Exam 2

Name _____ ID No. _____

Points: Q1 = 3, Q2 = 3, Q3 = 3, Q4 = 3, Q5 = 3, Q6 = 2, Q7 = 3

- 1) A man can invest his money at 4.5% compounded continuously or at 4.7% compounded quarterly. Which is the better choice? Justify your answer (No credit for unjustified answers.)

- 2) A person has the option of satisfying a debt by either paying \$5000 now and \$4000 in two years, or by paying \$3000 now, \$2000 a year from now, and a final payment of x dollars two years from now. Find x if the interest is at the rate of 10% compounded semiannually.

Equation of Value

$x =$

3) An investment grows from \$10,000 to \$10,473 in one year. If the investment continues to grow at that rate, find the number of years it will take the investment to double.

4) To buy a new car, you agree to pay SR 20,000 down and SR 1,400 at the end of every month period for 4 years. If the interest rate is 12% compounded monthly, what is the corresponding cash value of the car?

5) You are 20 years old. You open an account now and make equal payments of SR3000 at the beginning of each year. If the account earns 7.78% compounded annually, how old will you be when you become a millionaire?

6) For the following linear programming problem, construct the initial simplex tableau with complete labels.

maximize

$$Z = x_1 + 4x_2 + x_3$$

subject to

$$x_1 + x_2 + x_3 \leq 6$$

$$-x_1 + x_2 + 2x_3 \geq -2$$

$$x_1, x_2, x_3 \geq 0 \quad .$$

7) Consider the initial simplex tableau and answer the following questions.

$$\begin{array}{c} x_1 \quad x_2 \quad s_1 \quad s_2 \quad Z \\ s_1 \left[\begin{array}{ccccc|c} -1 & 2 & 1 & 0 & 0 & 8 \\ 10 & 6 & 0 & 1 & 0 & 12 \\ -3 & -8 & 0 & 0 & 1 & 0 \end{array} \right] \\ s_2 \\ Z \end{array}$$

a) The departing variable is

b) When Z attains its maximum value,

$$Z =$$

$$S_1 =$$

$$S_2 =$$

$$x_1 =$$

$$x_2 =$$