Problem Set – Week 1 – Class 2
ICGN104 Mathematics and Its Contemporary Applications

Name_________________________Student I.D.________________________Section________________

1. The board of directors of Maven Corporation agrees to redeem some of its bonds in two years. At that time, $1,102,500 will be required. Suppose the firm presently sets aside $1,000,000. At what annual rate of interest, compounded annually, will this money have to be invested in order that its future value be sufficient to redeem the bonds?

2. In two years, a company will begin an expansion program. It has decided to invest $3,000,000 now so that in two years the total value of the investment will be $3,245,000, the amount required for the expansion. What is the annual rate of interest, compounded annually, that the company must receive to achieve its purpose?

3. A real-estate firm owns the Parklane Garden Apartments, which consist of 96 apartments. At $550 per month, every apartment can be rented. However, for each $25 per month increase, there will be three vacancies with no possibility of filling them. The firm wants to receive $54,600 per month from rents. What rent should be charged for each apartment?
4. You are the chief financial advisor to a corporation that owns an office complex consisting of 50 units. At $400 per month, every unit can be rented. However, for each $20 per month increase, there will be two vacancies with no possibility of filling them. The corporation wants to receive a total of $20,240 per month from rents in the complex. You are asked to determine the rent that should be charged for each unit. What is your reply?

5. An investment club bought a bond of an oil corporate for $5000. The bond yields 4% per year. The club now wants to buy shares of stock in a windmill supply company. The stock sells at $20 per share and earns a dividend of $0.50 per share per year. How many shares should the club buy so that its total investment in stocks and bonds yields 3% per year?

6. A land investment company purchased a parcel of land for $7200. After having sold all
but 20 acres at a profit of $30 per acre over the original cost per acre, the company regained the entire cost of the parcel. How many acres were sold?

7. A machine company has an incentive plan for its salespeople. For each machine that a salesperson sells, the commission is $40. The commission for every machine sold will increase by $0.04 for each machine sold over 600. For example, the commission on each of 602 machines sold is $40.08. How many machines must a salesperson sell in order to earn $30,800?

8. A company manufactures products A and B. The cost of producing each unit of A is $2 more than that of B. The costs of production of A and B are $1500 and $1000, respectively, and 25 more units of A are produced than of B. How many of each are produced?