

1. The quantity demanded of a certain camera phone is 5000 a week when it is priced at \$160 each. For each decrease in unit price of \$10 below \$160, the quantity demanded increases by 800. The supply equation is $148p - 11840 = x$ where p is the unit price in dollars and x is the quantity of camera phones.

(8pts) $p =$ _____ a. What is the demand equation?

(8pts) _____ b. Including the units, what is the equilibrium point?

2. Solve the system of equations using Gauss-Jordan row operations to yield a reduced row echelon form. This can be done in two steps. You may either give the GJ row operation notation or the calculator command.

$$2x + 4y = 6$$

$$3x + 6y = 9$$

(8pts) a. _____ is the first GJ row operation.

(4pts) b. _____ is the second GJ row operation.

(8pts) c. _____ Solve the system by any method. If the answer is a point, give the point. If there is no solution, write "no solution." If there are an infinite number of solutions, give the set of all solutions, plus one particular solution.

$n =$ _____ 3. (8pts) Solve for n .

$$2 \begin{bmatrix} n & 1 \\ 0 & 2 \end{bmatrix} \begin{bmatrix} 3 \\ -1 \end{bmatrix} = [10 \quad -4]^T$$

4. The following table shows the annual number of eyeglasses donated to the Lions Club in the City of Aggieland in certain years. Let x be the number of years after 1998 and y be number of eyeglasses donated.

Year	1998	2000	2003	2004	2005	2006
Number of Eyeglasses Donated	420	500	525	520	565	580

(8pts) _____ a. Find the linear regression equation. Give the coefficients to 4 decimal places.

(4pts) _____ b. Using the linear regression equation, to the nearest whole number, how many eyeglasses would you predict donated in the year 2007?

(8pts) _____ 5. What is the linear depreciation rate (remember your units) if an \$8400 commercial refrigerator is worth \$6150 five years later?

6. An investor wants to invest \$500,000 in three funds: a bond fund, a money market fund, and a stock fund. The investor will invest three times as much in the bond and stock funds as in the money market fund. The weighted average return of all investments is \$40,750, where the bond fund gets a 7% return, the money market gets a 5% return, and the stock fund gets a 10% return. How much money should be invested in each fund? Give your answer as a complete sentence.

a. (3pts) Define your variables.

b. (3pts) Write the systems of equations.

c. (3pts) Give your answer as a complete sentence.

(8pts) _____ 7. To produce x stuffed animals, it costs, in dollars, $C(x) = 8.25x + 12000$. If 1200 stuffed animals are produced and sold, there is a loss of \$5700. What is the selling price of one stuffed animal?

