

70) $y = ax^2 + bx + c$

$a = -2 \quad b = 1 \quad c = 3$

$y = -2x^2 + x + 3$

$(1, 2) \quad (-2, -7) \quad (2, -3)$

$(1, 2) \rightarrow 2 = a(1)^2 + b(1) + c$

$2 = a + b + c$

$(-2, -7) \rightarrow -7 = a(-2)^2 + b(-2) + c$

$-7 = 4a - 2b + c$

$(2, -3) \rightarrow -3 = a(2)^2 + b(2) + c$

$-3 = 4a + 2b + c$

$$\begin{bmatrix} 1 & 1 & 1 \\ 4 & -2 & 1 \\ 4 & 2 & 1 \end{bmatrix} \begin{bmatrix} a \\ b \\ c \end{bmatrix} = \begin{bmatrix} 2 \\ -7 \\ -3 \end{bmatrix} \quad X = A^{-1}B \quad X = \begin{bmatrix} -2 \\ 1 \\ 3 \end{bmatrix}$$

74) Protein $\rightarrow 23P + 3C + 9M = 47$

Carb $\rightarrow 0P + 16C + 13M = 58$

Calcium $\rightarrow 10P + 10C + 300M = 630$

$$\begin{bmatrix} 23 & 3 & 9 \\ 0 & 16 & 13 \\ 10 & 10 & 300 \end{bmatrix} \begin{bmatrix} P \\ C \\ M \end{bmatrix} = \begin{bmatrix} 47 \\ 58 \\ 630 \end{bmatrix}$$

$X = A^{-1}B$
 $X = \begin{bmatrix} 1 \\ 2 \\ 2 \end{bmatrix}$

$P = 1$ serving pork
 $C = 2$ servings corn
 $M = 2$ glasses milk

76) $x =$ Treasury Bills
 $y =$ Treasury Bonds
 $z =$ Corporate Bonds

$x + y + z = 20,000$
 $.05x + .07y + .09z = 1280$
 $x - 2z = 0$

$x + y + z = 20,000$
 $.05x + .07y + .09z = 1280$
 $x - 2z = 0$

$X = A^{-1}B$
 $X = \begin{bmatrix} 12,000 \\ 2,000 \\ 6,000 \end{bmatrix}$

$$\begin{bmatrix} 1 & 1 & 1 \\ .05 & .07 & .09 \\ 1 & 0 & -2 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 20,000 \\ 1280 \\ 0 \end{bmatrix}$$

$x = \$12,000$ in TBills
 $y = \$2,000$ in TBonds
 $z = \$6,000$ in Corporate Bonds

80) $I_1 = I_3 + I_2$

$24 - 6I_1 - 3I_3 = 0$

$12 + 24 - 6I_1 - 6I_2 = 0$

$I_1 - I_2 - I_3 = 0$

$-6I_1 + 0I_2 - 3I_3 = -24$

$-6I_1 - 6I_2 + 0I_3 = -36$

$$\begin{bmatrix} 1 & -1 & -1 \\ -6 & 0 & -3 \\ -6 & -6 & 0 \end{bmatrix} \begin{bmatrix} I_1 \\ I_2 \\ I_3 \end{bmatrix} = \begin{bmatrix} 0 \\ -24 \\ -36 \end{bmatrix}$$

$X = A^{-1}B$
 $X = \begin{bmatrix} 3.5 \\ 2.5 \\ 1 \end{bmatrix}$

$I_1 = 3.5 \quad I_2 = 2.5 \quad I_3 = 1$