121 TEST 5 TAKE-HOME VERSION 1 SOLNS

Let x = the amount invested in growth stocks (in \$)

y = " " " " Bonds " "

z = " " " " Blue-Chip stocks " "

TOTAL INVESTMENT is \$6530

$$x + y + z = 6530$$

x, y, z earn @ rates of 10%, 5%, 2%, respectively, and total return was \$306.30

$$.1x + .05y + .02z = 306.30$$

The sum of x & y is \$1000 more than z

$$x + y = z + 1000 \Rightarrow$$

$$x + y - z = 1000$$

AUGMENTED MATRIX

$$\begin{bmatrix} 1 & 1 & 1 & 6530 \\ .1 & .05 & .02 & 306.3 \\ 1 & 1 & -1 & 1000 \end{bmatrix} \begin{matrix} R1 \\ 10\,R2 \\ R3 \end{matrix} \begin{bmatrix} 1 & 1 & 1 & 6530 \\ 1 & .5 & .2 & 3063 \\ 1 & 1 & -1 & 1000 \end{bmatrix}$$

$$\begin{matrix} R1 \\ -R1+R2 \\ -R1+R3 \end{matrix} \begin{bmatrix} 1 & 1 & 1 & 6530 \\ 0 & -.5 & -.8 & -3467 \\ 0 & 0 & -2 & -5530 \end{bmatrix}$$

$$-2z = -5530$$

$$\boxed{z = 2765}$$

$$(-.5y - .8z = -3467)(-2)$$

$$1y + 1.6z = 6934$$

$$y + 1.6(2765) = 6934$$

$$y + 4424 = 6934$$

$$\boxed{y = 2510}$$

$$x + y + z = 6530$$

$$x + 2510 + 2765 = 6530$$

$$x + 5275 = 6530$$

$$\boxed{x = 1255}$$

$$\boxed{\{(1255, 2510, 2765)\}}$$

CHECK:

$$\begin{bmatrix} 1 & 1 & 1 \\ .1 & .05 & .02 \\ 1 & 1 & -1 \end{bmatrix} \begin{bmatrix} 1255 \\ 2510 \\ 2765 \end{bmatrix} =$$

$$\begin{bmatrix} 1255 + 2510 + 2765 \\ 125.5 + 125.50 + 55.30 \\ 1255 + 2510 - 2765 \end{bmatrix} = \begin{bmatrix} 6530 \\ 306.3 \\ 1000 \end{bmatrix} \checkmark$$