HAT
Chapter 3 REVIEW

9/14/17

Solve for the missing variables.

$$\begin{bmatrix} 10 & -12 \\ 4 & 3 \end{bmatrix} - \begin{bmatrix} 2 & -1 \\ -5 & 3 \end{bmatrix} \cdot 3 \begin{bmatrix} -x & 3 \\ -3y & 4 \end{bmatrix} = \begin{bmatrix} -2 & \underline{} \\ 43 & \underline{} \end{bmatrix}$$

Create a 2 x 2 matrix that has a determinant of 3.

A small medical clinic specializes in general and orthopedic surgeries. Each general case requires 1 man-hour of surgery time and 3 man-hours of therapy. Each orthopedic case requires 3 man-hours of surgery and 4 man-hours of therapy. To keep the staff occupied, they must schedule at least 40 man-hours for surgery and at least 60 man-hours for therapy. To keep from overtaxing the resources, twice the number of general cases plus the number of orthopedic cases must total no more than 30 cases.

Let x= # general cases and y= # orthopedic cases.

  Write and graph the constraint inequalities.

  Use substitution, elimination, and inverse matrices
  to find the vertices. Use each method once.

Each general case costs $200 in overhead and each orthopedic case costs $300 in overhead. How many general and orthopedic cases should the clinic schedule to minimize the overhead costs?

Solve the system by ELIMINATION.

(Then check by solving using matrices.)

$$\begin{cases} -2x + 5y - 8z = -18 \\ 3x + 2y - 7z = -11 \\ 6x - 15y + 24z = 54 \end{cases}$$