

$$A = \begin{bmatrix} 3 & -2 & 6 \\ -4 & 1 & 2 \end{bmatrix}$$

$$B = \begin{bmatrix} -3 & 4 \\ 2 & 5 \end{bmatrix}$$

$$C = \begin{bmatrix} 0 & 4 & 1 \\ -2 & 1 & 6 \\ 2 & -1 & 0 \end{bmatrix}$$

1. Given the matrices named above, find each of the following (or write "not possible").

a)  $3A$

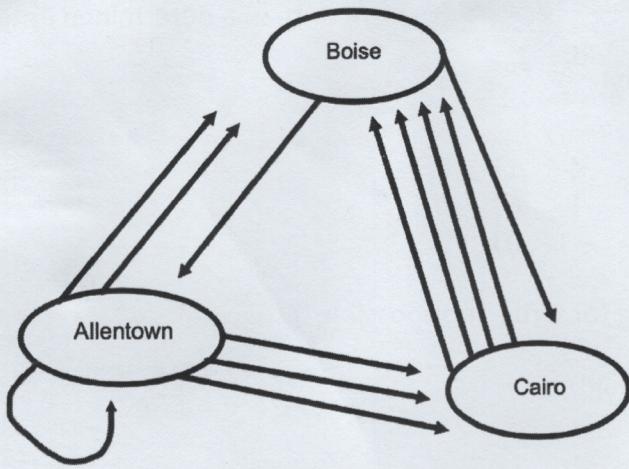
b)  $A^T B$

c)  $B^2$

d) Matrix D, such that  $B + D = I$

e)  $BC$

f)  $B^{-1}$



2. The diagram above shows train routes between 3 cities. How many ways could you travel from Allentown to Cairo if you wanted to ride exactly 3 trains? Show your work, which should include matrices.

3. Solve the system of equations using either Gauss-Jordan Elimination or Matrix Inverses.

$$\begin{cases} x + 2y + 3z = 1 \\ y - z = 2 \\ x + 2y + 4z = 3 \end{cases}$$