

2.) a.)  $E + F$   
 b.)  $rEF, r=4$

$$E = \begin{pmatrix} 1 & 2 & 0 \\ -1 & 3 & 4 \\ 2 & -2 & 1 \end{pmatrix}, \quad F = \begin{pmatrix} 2 & -1 & 3 \\ 0 & 4 & -2 \\ 1 & 1 & 0 \end{pmatrix}$$

Answers:

$$a.) E + F = \begin{pmatrix} 1 & 2 & 0 \\ -1 & 3 & 4 \\ 2 & -2 & 1 \end{pmatrix} + \begin{pmatrix} 2 & -1 & 3 \\ 0 & 4 & -2 \\ 1 & 1 & 0 \end{pmatrix}$$

$$= \begin{pmatrix} 1+2 & 2+(-1) & 0+3 \\ -1+0 & 3+4 & 4+(-2) \\ 2+1 & -2+1 & 1+0 \end{pmatrix}$$

$$E + F = \begin{pmatrix} 3 & 1 & 3 \\ -1 & 7 & 2 \\ 3 & -1 & 1 \end{pmatrix}$$

$$b.) rEF = 4 \begin{pmatrix} 1 & 2 & 0 \\ -1 & 3 & 4 \\ 2 & -2 & 1 \end{pmatrix} \begin{pmatrix} 2 & -1 & 3 \\ 0 & 4 & -2 \\ 1 & 1 & 0 \end{pmatrix}$$

$$EF = \begin{pmatrix} (1)(2) + (2)(0) + (0)(1) & (-1)(2) + (3)(0) + (4)(1) & (2)(2) + (-2)(0) + (1)(1) \\ (1)(-1) + (2)(4) + (0)(1) & (-1)(-1) + (3)(4) + (4)(1) & (2)(-1) + (-2)(4) + (1)(1) \\ (1)(3) + (2)(-2) + (0)(0) & (-1)(3) + (3)(-2) + (4)(0) & (2)(3) + (-2)(-2) + (1)(0) \end{pmatrix}$$

$$EF = \begin{pmatrix} 2 & 7 & 1 \\ 2 & 17 & -9 \\ 5 & -9 & 10 \end{pmatrix}$$

$$4EF = 4 \begin{pmatrix} 2 & 7 & 1 \\ 2 & 17 & -9 \\ 5 & -9 & 10 \end{pmatrix}$$

$$rEF = \begin{pmatrix} 8 & 28 & 4 \\ 8 & 68 & -36 \\ 20 & -36 & 40 \end{pmatrix}$$