Answer to even homework problems from week 1 (section 2.1 coming soon)

1.2 #4: (a)

$$C + E = E + C = \begin{bmatrix} 5 & -5 & 8 \\ 4 & 2 & 9 \\ 5 & 3 & 4 \end{bmatrix}.$$

(b) Not possible

(c) Not possible

(d)

$$-3C + 5O = \begin{bmatrix} -9 & 3 & -9 \\ -12 & -3 & -15 \\ -6 & -3 & -9 \end{bmatrix}$$

(e)

$$2C - 3E = \begin{bmatrix} 0 & 10 & -9 \\ 8 & -1 & -2 \\ -5 & -4 & 3 \end{bmatrix}$$

(f) Not possible

3.2 #4: Fails property 6.

3.2 #6: Fails properties 4 and b.

3.2 #12: No (fails property 3, for instance)

3.2 #14: No (fails property 1, for instance)

3.3 #2: Yes.

3.3 #4: No (Any non-zero vector $\mathbf{u}$ with its head in the square has the property that $-1(\mathbf{u})$ does not have its head in the square, so it's not closed under scalar multiplication.)

3.3 #6: (a) Yes; (b) No (not closed under scalar multiplication); (c) Yes; (d) No (not closed under either vector addition or scalar multiplication).

3.3 #8: (a) Yes; (b) No (not closed under either operation); (c) No (not closed under scalar multiplication).

3.3 #10: (a) No (neither); (b) No (neither); (c) Yes.

3.3 #12: (a) Yes; (b) Yes; (c) No (neither).

3.3 #14: (b) Yes; (c) Yes.

3.3 #16: (a) Yes; (b) Yes; (c) Yes; (d) Yes.

3.3 #28: (a) Yes; (b) No; (c) Yes; (d) No.

3.3 #30: (a) Yes; (b) Yes; (c) No; (d) No.

3.4 #4: (a) Yes; (b) No; (c) Yes; (d) No.

2.1 #8:

2.1 #14:

2.1 #16:

2.1 #30: