Assignment 7 Q1: Linear Algebra

1) 1) $\langle 4,5,6,7\rangle + \langle 1,2,0,1\rangle = \langle 5,7,6,8\rangle$
2) $\langle 43,10,-2\rangle + \langle 0,11,-3\rangle = \langle 43,21,-5\rangle$
3) $\langle 1,2,3,4\rangle + \langle 7,6,5\rangle \rightarrow$ not allowed
4) $\langle 1\rangle + \langle 0\rangle = \langle 1\rangle$

2) 1) $\langle 3,7,8,10\rangle * 5 = \langle 15,35,40,50\rangle$
2) $\langle 4,5,6,3\rangle * 2.5 = \langle 10,12.5,15,7.5\rangle$
3) $\langle 3,7,8,9\rangle * 0 = \langle 0,0,0,0\rangle$

3) 1) $\langle 3,5,7\rangle \cdot \langle 1,2,3\rangle = (3*1)+(5*2)+(7*3) = 35$
2) $\langle 4,5,0,-1\rangle \cdot \langle 0,2,3,-4\rangle = (4*0)+(5*2)+(0*3)+(-1*(-4)) = 14$
3) $\langle 4,4,1\rangle \cdot \langle 0,1,0\rangle = (4*0)+(4*1)+(1*0) = 4$

4) 1) $\begin{bmatrix} 3 & 3 \\ 5 & 1 \end{bmatrix}$ 2) $\begin{bmatrix} 5 & 4 \\ 5 & 0 \\ 9 & 3 \end{bmatrix}$ 3) undefined

5) 1) $\begin{bmatrix} 2 & 3 \\ 9 & 12 \end{bmatrix}$ 2) $\begin{bmatrix} 11 & 16 & 6 \\ 5 & 20 & 10 \\ 11 & 18 & 8 \end{bmatrix}$ 3) $\begin{bmatrix} 13 & 6 & 4 \\ 3 & 6 & 12 \end{bmatrix}$

6) 1) a) cat: cats, dog, kitten
b) computer: computers, software, internet
c) shot: shots, shooting, shoot
d) frame: period, framed, window
e) scan: detect, check, tests
2) a) man + child: boy, woman, girl
b) human + age: humans, ages, adult
c) doctor + female: male, nurse, physician
d) echo + park: echoes, echoing, terrace