(1) Verify if the vectors $v_1 = (3,-2,-4), v_2 = (5,2,-3), v_3 = (4,1,-2)$ are linearly independent.

(2) Find three different ways to express the vector $(1,2,3)$ as a linear combination of $v_1 = (1,0,0), v_2 = (0,2,0), v_3 = (0,0,3)$ and $v_4 = (1,1,1)$.

(3) Let $S = \{(1,2,-2), (3,-1,1),(4,1,-1),(1,3,6)\}$. Show that $S$ is a linearly dependent set.

(4) Show that the vectors $u = (1,4,4), v = (-1,3,6), w = (-3,2,8)$ are linearly dependent by expressing one or more vectors as a linear combination of the other two.

(5) Determine whether the given set of vectors are linearly independent.
   (i) $v_1 = (2,5,4), v_2 = (0,6,-2), v_3 = (2,1,8), v_4 = (4,3,-7)$.
   (ii) $v_1 = (4,7,-2), v_2 = (9,7,2,-1), v_3 = (4,-3,1,5), v_4 = (6,4,9,1), v_5 = (4,-7,0,6)$.

(6) For which real values of $\lambda$ do the following vectors form a linearly independent set in $\mathbb{R}^3$?
   $v_1 = (\lambda, \frac{1}{2}, \frac{1}{2}), v_2 = (\frac{1}{2}, \lambda, \frac{1}{2}), v_3 = (\frac{1}{2}, \frac{1}{2}, \lambda)$.

(7) Show that if $v_1, v_2, v_3$ are any vectors in $\mathbb{R}^n$ then the vectors $v_1 - v_2, v_2 - v_3, v_3 - v_1$ form linearly dependent set.

(8) Verify if the vector $W = (-2,0,1)$ is a linear combination of the vectors $v_1 = (2,3,1), v_2 = (4,9,5), v_3 = (-10,-21,-12)$.

(9) Determine if the vectors are LI: $v_1 = (3,8,7,-3), v_2 = (1,5,3,-1), v_3 = (2,-1,2,6), v_4 = (1,4,0,3)$. 

1