Exercise 1
Find an equation for the plane generated (spanned) by the vectors:

\[ \mathbf{u} = (1, 1, -2), \quad \mathbf{v} = (-1, -3, 0). \]

Exercise 2
Determine whether the vectors span \( \mathbb{R}^3 \):

(i) \( \mathbf{v}_1 = (3, -1, 2), \mathbf{v}_2 = (2, 2, -4), \mathbf{v}_3 = (2, 0, 0) \);

Determine whether the vectors span \( \mathbb{R}^2 \):

(ii) \( \mathbf{v}_1 = (1, -2), \mathbf{v}_2 = (1, -1), \mathbf{v}_3 = (-1, 1) \).

Exercise 3
Which of the following sets of vectors are linearly dependent?

(i) \( (1, 1), (1, 1) \);

(ii) \( (0, 1, -1), (1, -1, 0), (-2, 0, 2) \);

(iii) \( (1, 0, 1, 0, 0), (0, 1, 3, 1, 1), (0, -2, 0, 0, 1) \).