Lecture 1 Problems

Problem 1.1

Rewrite this as the system of equations

$1x + 4y + 7z = 0$
$2x + 5y + 8z = 0$
$3x + 6y + 9z = 0$

become

$2x + 8y + 14z = 0$
$-(2x + 10y + 16z) = 0$
$-2y - 2z = 0 \quad 3y + 6z = 0$

become

$6x + 15y + 24z = 0$
$-(6x + 12y + 18z) = 0$
$3y + 6z = 0$

Strange, there was an obvious solution I ignored!

$x_1 = x = 0$
$x_2 = y = 0$
$x_3 = z = 0$

or more interestingly,

$x_1 = 1$
$x_2 = -2$
$x_3 = 1$

Since there is a solution, they are dependent. They also lie in a plane.

Problem 1.2

$$\begin{bmatrix} -1 \\ 9 \\ 11 \end{bmatrix}$$

Problem 1.3

True.