

Exercice 1:

Calculer:

- (i) $6(1, 3, 2) + 2(2, 1, 4, 1)$ (ii) $3(1, 2, 3) - 2(3, 1, 1) + a(2, 1, 2)$.
 (iii) $\langle (1, 3, 5, 2) | (2, 1, 3, -4) \rangle$ (iv) $\|(2, 1, -1)\|$.
 (v) $\|(1, 3, -2)\| + \|(4, -3)\|$ (vi) $d((1, 3); (3, 2, 1))$.
 (vii) $d((1, 2); (3, 3))$ (viii) $\langle (3, -1, 2) | (2, 1, -1) \rangle + \|(4, 0, -3)\|$.

Exercice 2:

Déterminer a et b tels que:

- (i) $(2, 1 + a, a + b) = (1, 3, 0) + 2(0, -2, 1)$.
 (ii) $(1, a, a - b) = 2(1, 3, 0) - (1, -2, 1)$.
 (iii) $\|(1, -\sqrt{2}, 1 + a)\| = 2\sqrt{3}$.
 (iv) $d((a, 0, 1); (1, 2a, 0)) = 2$.

Exercice 3:

Résoudre les systèmes suivants (en fonction de α):

- (i) $\begin{cases} x + y = 2 \\ y + z = -3 \\ 2x - 2y = 16 \end{cases}$ (ii) $\begin{cases} 2x + y - z = 2 \\ 2x + 2y = 4 \\ -x + y/2 + 3z/2 = 1 \end{cases}$
 (iii) $\begin{cases} 2x + y - 3z = -1 \\ -x + 3y + 2z = 7 \\ 3x + 5y - 4z = 2 \end{cases}$ (iv) $\begin{cases} x + 2y - z = 3 \\ x + 3y - 3z = 2 \\ -2x - 3y + z = -4 \end{cases}$
 (v) $\begin{cases} 2x - y + z + t = -1 \\ x + y - 2z + 3t = 5 \\ y + 2z - t = 0 \\ -x - y + z - t = -4 \end{cases}$ (vi) $\begin{cases} x + 3y + z = 2 \\ 3x + y - z = 2 \\ \alpha x + 3y + 2z = \alpha + 1 \end{cases}$