

LDDR Niveau 1: TE 10 GEOMETRIE PLANEEXERCICE 1.

$$\vec{a} = \begin{pmatrix} 3 \\ 4 \end{pmatrix} \quad \vec{b} = \begin{pmatrix} -2 \\ 5 \end{pmatrix} \quad \vec{c} = \begin{pmatrix} -2 \\ 6 \end{pmatrix}$$

$$1) \vec{d} = -2\vec{a} + 5\vec{b} = \begin{pmatrix} -6 \\ -8 \end{pmatrix} + \begin{pmatrix} -10 \\ 25 \end{pmatrix} = \begin{pmatrix} -16 \\ 17 \end{pmatrix}$$

$$2) \vec{e} = \frac{3}{4}\vec{a} - \frac{2}{5}\vec{b} = \begin{pmatrix} 9/4 \\ 3 \end{pmatrix} - \begin{pmatrix} -4/5 \\ 2 \end{pmatrix} = \begin{pmatrix} -29/20 \\ 1 \end{pmatrix}$$

$$3) \vec{f} = 3\vec{b} - \frac{1}{2}(\vec{a} - \vec{c}) = \begin{pmatrix} -6 \\ 15 \end{pmatrix} - \frac{1}{2} \begin{pmatrix} 5 \\ -2 \end{pmatrix} = \begin{pmatrix} -6 \\ 15 \end{pmatrix} - \begin{pmatrix} 5/2 \\ -1 \end{pmatrix} = \begin{pmatrix} -17/2 \\ 16 \end{pmatrix}$$

EXERCICE 2.

$$A(-2; -1) \quad B(4; 2)$$

$$1. \vec{AB} = \begin{pmatrix} 6 \\ 3 \end{pmatrix} \quad 2. M\left(\frac{-2+4}{2}; \frac{-1+2}{2}\right) = \left(1; \frac{1}{2}\right)$$

$$3. \vec{OC} = \vec{OA} + \begin{pmatrix} 3 \\ 4 \end{pmatrix} = \begin{pmatrix} -2 \\ -1 \end{pmatrix} + \begin{pmatrix} 3 \\ 4 \end{pmatrix} \Rightarrow \vec{OC} = \begin{pmatrix} 1 \\ 3 \end{pmatrix} \Rightarrow C(1; 3)$$

$$4. \begin{array}{c} \text{A} \quad \text{C} \quad \text{D} \\ \hline \end{array} \quad \vec{AC} = \vec{CD} \Rightarrow \begin{pmatrix} 3 \\ 4 \end{pmatrix} = \begin{pmatrix} x-1 \\ y-3 \end{pmatrix} \Rightarrow \begin{array}{l} x=4 \\ y=7 \end{array}$$

$$5. A(-2; -1) \quad B(4; 2) \quad C(1; 3)$$

$$G = \left(\frac{-2+4+1}{3}; \frac{-1+2+3}{3}\right) \Rightarrow G\left(1; \frac{4}{3}\right)$$

EXERCICE 3.

$$a: \begin{cases} x = -1 + 3\lambda \\ y = 4 - 2\lambda \end{cases} \quad b: B(0; -1) \quad \vec{b} = \begin{pmatrix} 2 \\ 1 \end{pmatrix} \quad \begin{cases} x = 2 + \mu \\ y = -1 + \mu \end{cases}$$

$$1. A(-1; 4) \quad \vec{a} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$$

$$2. b: \begin{cases} x = 2 + \mu \\ y = -1 + \mu \end{cases}$$

$$3. \vec{a} = \begin{pmatrix} 3 \\ -2 \end{pmatrix} \Rightarrow \vec{n}_a = \begin{pmatrix} 2 \\ 3 \end{pmatrix} \quad 2x + 3y + c = 0 \quad A: -2 + 12 + c = 0 \Rightarrow c = -10$$

$$a: 2x + 3y - 10 = 0$$

$$\vec{b} = \begin{pmatrix} 2 \\ 1 \end{pmatrix} \Rightarrow \vec{n}_b = \begin{pmatrix} 1 \\ -2 \end{pmatrix} \quad x - 2y + c = 0$$

$$b: x - 2y - 2 = 0$$

$$B: +2 + c = 0 \Rightarrow c = -2$$

$$4. x - 2y = 2 \Leftrightarrow 2y = x - 2 \Rightarrow y = \frac{1}{2}x - 1 \quad m = \frac{1}{2}$$

$$5. I = a \cap b \quad \begin{cases} 2x + 3y = 10 \\ x - 2y = 2 \quad (*) \end{cases} \quad \begin{cases} 2x + 3y = 10 \\ -2x + 4y = -4 \end{cases}$$

$$\frac{6}{7} - 2y = 2 \Rightarrow 2y = \frac{-8}{7} \Rightarrow y = -\frac{4}{7} \quad 4x = 6 \Rightarrow x = \frac{3}{2}$$

$$I\left(\frac{3}{2}; -\frac{4}{7}\right)$$

EXERCICE 4.

$$d_1: \begin{cases} x = 2 - 3\lambda \\ y = 4 + 2\lambda \end{cases}$$

$$d_2: 3x - 2y - 11 = 0$$

$$1. d_1 \cap O_x \quad y = 0 \Rightarrow 4 + 2\lambda = 0 \Rightarrow \lambda = -2 \quad (8; 0)$$

$$d_1 \cap O_y \quad x = 0 \Rightarrow 2 - 3\lambda = 0 \Rightarrow \lambda = \frac{2}{3} \quad (0; \frac{16}{3})$$

$$d_2 \cap O_x \quad y = 0 \quad 3x = 11 \Rightarrow x = \frac{11}{3} \quad (\frac{11}{3}; 0)$$

$$d_2 \cap O_y \quad x = 0 \quad -2y = 11 \Rightarrow y = -\frac{11}{2} \quad (0; -\frac{11}{2})$$

$$2. d_1 \quad A(2; 4) \quad \vec{d}_1 = \begin{pmatrix} -3 \\ 2 \end{pmatrix}$$

$$d_2: \quad y = -1 \quad 3x + 2 - 11 = 0 \Rightarrow 3x = 9 \Rightarrow x = 3$$

$$B(3; -1) \quad \vec{d}_2 = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$$

$$3. P(1; -3) \notin d_2 \quad 3 + 6 - 11 = -2 \neq 0 \Rightarrow \text{Non}$$

$$4. \vec{d}_1 = \begin{pmatrix} -3 \\ 2 \end{pmatrix} \wedge \vec{d}_2 = \begin{pmatrix} 2 \\ 3 \end{pmatrix} \Rightarrow \text{se'cantes}$$

$$\vec{d}_1 \cdot \vec{d}_2 = -6 + 6 = 0 \Rightarrow d_1 \perp d_2$$

$$5. d_1 \quad A(2; 4) \\ A'(-1; 6)$$

