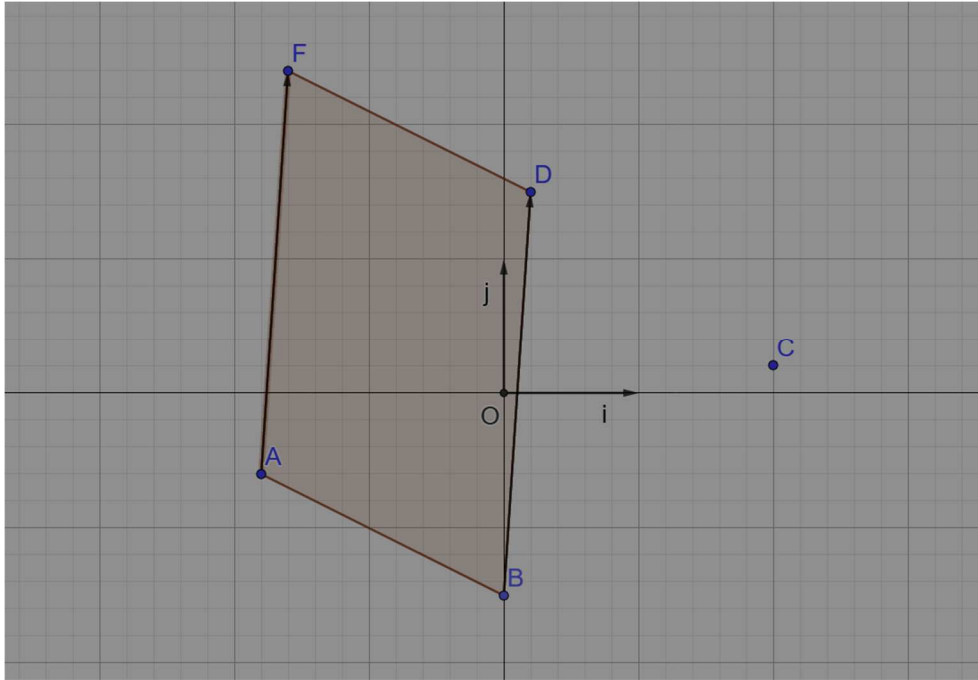


TG 6. Corrigé

Exercice 1



$$2^\circ A\left(-\frac{9}{5}; -\frac{3}{5}\right) \text{ et } B\left(0; -\frac{3}{2}\right) \text{ donc } \overrightarrow{AB}\left(0 + \frac{9}{5}; -\frac{3}{2} + \frac{3}{5}\right) \Rightarrow \overrightarrow{AB}\left(\frac{9}{5}; -\frac{9}{10}\right)$$

$$D\left(\frac{1}{5}; \frac{3}{2}\right) \text{ et } C\left(2; \frac{1}{5}\right) \text{ donc } \overrightarrow{DC}\left(2 - \frac{1}{5}; \frac{1}{5} - \frac{3}{2}\right) \Rightarrow \overrightarrow{DC}\left(\frac{9}{5}; -\frac{13}{10}\right)$$

Comme $\overrightarrow{AB} \neq \overrightarrow{DC}$ le quadrilatère $ABCD$ n'est pas un parallélogramme.

3° $ABDF$ est un parallélogramme si par exemple $\overrightarrow{AB} = \overrightarrow{FD}$

$$\text{On a } \overrightarrow{AB}\left(\frac{9}{5}; -\frac{9}{10}\right) \text{ et si l'on pose } F(x; y), \overrightarrow{FD}\left(\frac{1}{5} - x; \frac{3}{2} - y\right)$$

$$\text{Comme } \overrightarrow{AB} = \overrightarrow{FD} \text{ on obtient } \begin{cases} \frac{1}{5} - x = \frac{9}{5} \\ \frac{3}{2} - y = -\frac{9}{10} \end{cases} \text{ donc } \begin{cases} x = \frac{1}{5} - \frac{9}{5} = -\frac{8}{5} \\ y = \frac{3}{2} + \frac{9}{10} = \frac{12}{5} \end{cases}$$

$$\text{Donc } \underline{F\left(-\frac{8}{5}; \frac{12}{5}\right)}$$

Exercice 2

$$1^\circ AB = \sqrt{80} = \sqrt{16} \times \sqrt{5} = 4\sqrt{5}; AC = 2\sqrt{20} = 2 \times \sqrt{4} \times \sqrt{5} = 4\sqrt{5}$$

$$\text{Et } BC = \sqrt{156} = \sqrt{4} \times \sqrt{39} = 2\sqrt{39}$$

2° Comme $AB = AC$ le triangle ABC est isocèle en A.

$$3^\circ BC^2 = 156; AB^2 = 80 \text{ et } AC^2 = 80$$

Si le triangle est rectangle l'hypoténuse est BC. Or $BC^2 = 156$ alors que $AB^2 + AC^2 = 160$. Donc le triangle ABC n'est pas rectangle.

Exercice 3

$$A = (\sqrt{3} - \sqrt{7})^2 = 3 - 2\sqrt{3} \times \sqrt{7} + 7 = 10 - 2\sqrt{21}$$

$$B = (2\sqrt{10} + \sqrt{2})^2 = 40 + 2(2\sqrt{10})\sqrt{2} + 2 = 42 + 4\sqrt{20} = 42 + 4\sqrt{4} \times \sqrt{5}$$

$$\text{Donc } B = 42 + 8\sqrt{5}$$

$$C = [(\sqrt{5} - \sqrt{2}) + \sqrt{3}][(\sqrt{5} - \sqrt{2}) - \sqrt{3}] = (\sqrt{5} - \sqrt{2})^2 - 3$$

$$\text{Donc } C = 5 - 2\sqrt{10} + 2 - 3 = 4 - 2\sqrt{10}$$

Exercice 4

$$A(x) = 25x^2 - 9 = (5x)^2 - 3^2 = (5x - 3)(5x + 3)$$

$$B(x) = 4x^2 - (3x + 5)^2 = (2x)^2 - (3x + 5)^2 = [2x - (3x + 5)][2x + (3x + 5)]$$

$$\text{Donc } B(x) = (2x - 3x - 5)(2x + 3x + 5) = (-x - 5)(5x + 5)$$

$$C(x) = x^2 - 4 - (x - 2)(2x + 3) = (x - 2)(x + 2) - (x - 2)(2x + 3)$$

$$\text{Donc } C(x) = (x - 2)[(x + 2) - (2x + 3)] = (x - 2)(x + 2 - 2x - 3)$$

$$\text{Donc } C(x) = (x - 2)(-x - 1)$$

$$D(x) = 2(2x + 3)^2 + 4x^2 - 9 = 2(2x + 3)(2x + 3) + (2x)^2 - 3^2$$

$$\text{Donc } D(x) = 2(2x + 3)(2x + 3) + (2x - 3)(2x + 3)$$

$$\text{Donc } D(x) = (2x + 3)[2(2x + 3) + 2x - 3] = (2x + 3)(4x + 6 + 2x - 3)$$

$$\text{Donc } \underline{D(x) = (2x + 3)(6x + 3)}$$