

$$\mathbf{9.3} \quad \|\overrightarrow{AB}\| = \left\| \begin{pmatrix} 5-2 \\ 5-1 \end{pmatrix} \right\| = \left\| \begin{pmatrix} 3 \\ 4 \end{pmatrix} \right\| = \sqrt{3^2 + 4^2} = \sqrt{9+16} = \sqrt{25} = 5$$

$$\begin{aligned} \|\overrightarrow{AC}\| &= \left\| \begin{pmatrix} 0-2 \\ -7-1 \end{pmatrix} \right\| = \left\| \begin{pmatrix} -2 \\ -8 \end{pmatrix} \right\| = \left\| -2 \begin{pmatrix} 1 \\ 4 \end{pmatrix} \right\| = |-2| \left\| \begin{pmatrix} 1 \\ 4 \end{pmatrix} \right\| = \\ &= 2\sqrt{1^2 + 4^2} = 2\sqrt{1+16} = 2\sqrt{17} \end{aligned}$$

$$\begin{aligned} \|\overrightarrow{BC}\| &= \left\| \begin{pmatrix} 0-5 \\ -7-5 \end{pmatrix} \right\| = \left\| \begin{pmatrix} -5 \\ -12 \end{pmatrix} \right\| = \sqrt{(-5)^2 + (-12)^2} = \sqrt{25+144} = \\ &= \sqrt{169} = 13 \end{aligned}$$

Le périmètre du triangle ABC vaut donc $5 + 2\sqrt{17} + 13 = 18 + 2\sqrt{17}$.