Solving 2D problems

Your subtitle (if there's one)

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geometric question

- Given,the axis of the ellipse are the co-ordinate axes and passes through points(2,-1) and(4,-2).find the eccentricity.
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Geometry question into matrix formation

The ellipse passes through the point P= $\begin{bmatrix} 4 \\ -1 \end{bmatrix}$ and Q= $\begin{bmatrix} -2 \\ 2 \end{bmatrix}$ then find the eccentricity of the ellipse.

Solution using matrices

Given P= $\begin{bmatrix} 4 \\ -1 \end{bmatrix}$ and Q= $\begin{bmatrix} -2 \\ 2 \end{bmatrix}$ The ellipse equation is

$$x^2/a^2 + y^2/b^2 = 1 \tag{1}$$

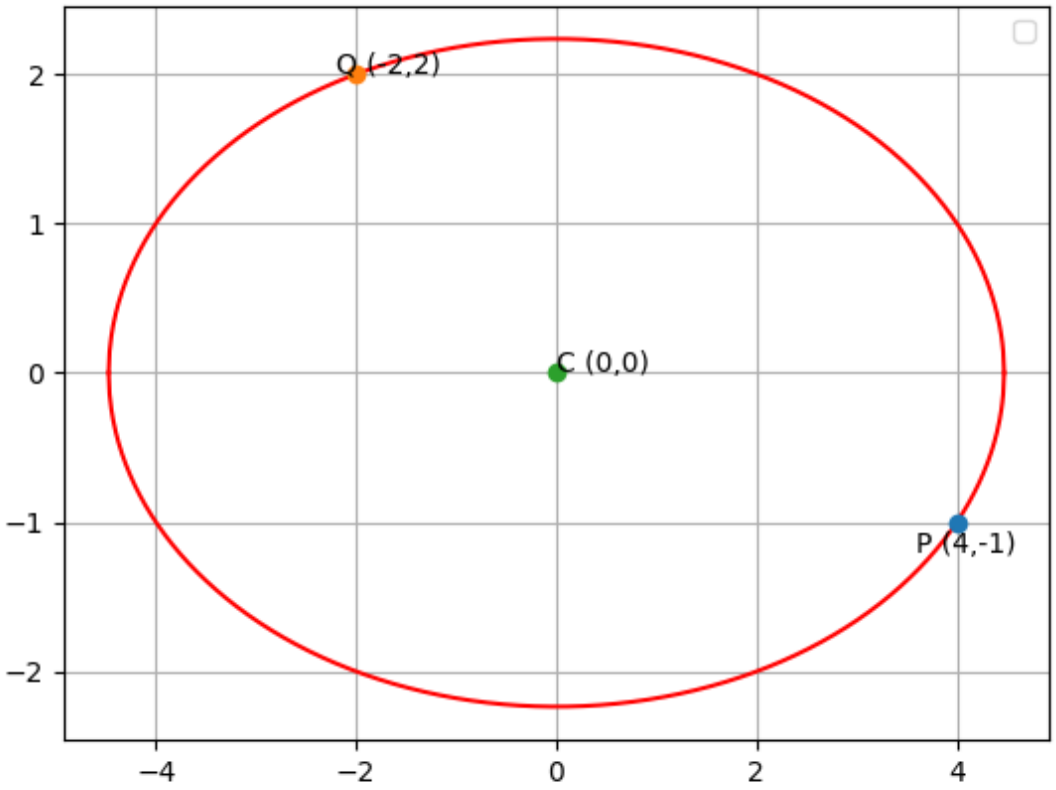
By substituting P,Q points in the ellipse equation we get a,b. By this a=4.47 and b=2.23 then

$$c = b/a = 0.498 \tag{2}$$

then eccentricity

$$e = \sqrt{(1 - b^2/a^2)} = 0.867 \tag{3}$$

Plot



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