Assignment

Barath Surya M (EE22BTECH11014)

Quesiton 1.4.3

Verify that **O** satisfies **??** . **O** is known as the circumcentre.

Solution: From the previous question we get,

$$\mathbf{O} = \frac{1}{12}\begin{pmatrix}-53\\5\end{pmatrix} \tag{1}$$

when substituted in the above equation,

$$= \left(\mathbf{O} - \frac{\mathbf{B}+\mathbf{C}}{2}\right).(\mathbf{B}-\mathbf{C}) \tag{2}$$

$$= \left(\frac{1}{12}\begin{pmatrix}-53\\5\end{pmatrix} - \frac{1}{2}\begin{pmatrix}-7\\1\end{pmatrix}\right)^{\top}\begin{pmatrix}-1\\11\end{pmatrix} \tag{3}$$

$$= \frac{1}{12}\begin{pmatrix}-11 & -1\end{pmatrix}\begin{pmatrix}-1\\11\end{pmatrix} \tag{4}$$

$$= 0 \tag{5}$$

It is hence proved that **O** satisfies the equation **??**

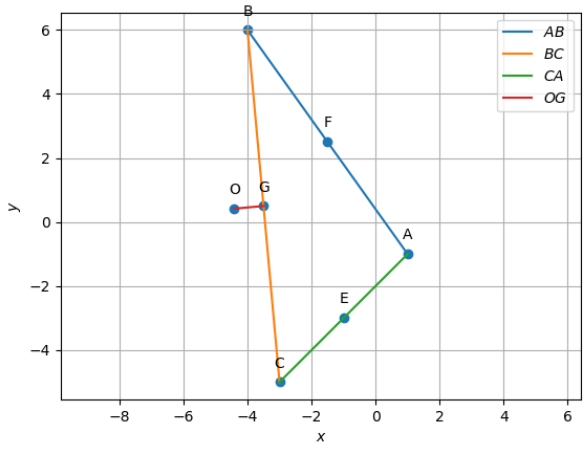

Fig. 0. Circumcenter plotted using python