Problem 42

The polar coordinates of a point are $4\pi/3$ and 5.50 m. What are its Cartesian coordinates?

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Solution

Use the formulas for x and y.

$$\begin{cases} x = r\cos\theta \\ y = r\sin\theta \end{cases}$$

$$\begin{cases} x = (5.50 \text{ m}) \cos \dfrac{4\pi}{3} \\ y = (5.50 \text{ m}) \sin \dfrac{4\pi}{3} \end{cases}$$

Therefore, the Cartesian coordinates are

$$\begin{cases} x = -2.75 \\ y \approx -4.76 \end{cases}.$$