Answer on Question #77024 - Math – Calculus

Find the polar coordinates of P if the rectangular coordinates are $(-1, -2)$. $0 \leq \theta \leq 2\pi$.

Here are the formulas connecting the polar and cartesian coordinate systems:

$$p = \sqrt{x^2 + y^2}$$

$$tan\theta = \frac{y}{x} \Rightarrow \theta = arctan\frac{y}{x}$$

Substitute our data in formulas:

$$p = \sqrt{(-1)^2 + (-2)^2} = \sqrt{1 + 4} = \sqrt{5} \approx 2.2$$

$$tan\theta = \frac{-2}{-1} \Rightarrow \theta = arctan(2) \approx 360° - 116.5° = 243.5°$$

The value of the arc tangent can be found using a calculator or a Bradis table.

As we know, the polar coordinate is represented as (p, θ), so our coordinate $P = (2.2, 243.5°)$

Answer: $P = (2.2, 243.5°)$