

Name _____

Date _____

Rectangular and Polar Forms of Complex Numbers - Step-by-Step Lesson

Convert the following polar coordinates to rectangular form.

$$(3, 10^\circ)$$

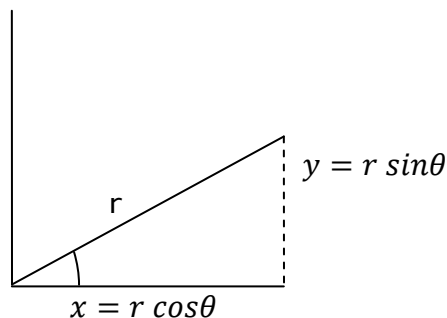
Explanation:

Rectangular Coordinates are your basic (x, y) coordinates. They give you a vertical distance (y) and a horizontal distance (x).

Polar Coordinates are in the form (r, θ)

r = the distance from the origin

θ = angle relative to the Zero axis



We start with $(3, 10^\circ)$. We need to convert these polar coordinates to rectangular coordinates. We can do this by using these formulas:

$$x = r \cos \theta \quad \text{and} \quad y = r \sin \theta$$

Now we plug our numbers into this equation:

$$x = 3 \cos 10^\circ$$

$$y = 3 \sin 10^\circ$$

$$x = 3 \times 0.98$$

$$y = 3 \times 0.17$$

$$x = 2.94$$

$$y = 0.51$$

Rectangular form = $(2.94, 0.51)$

