Converting Rectangular Coordinates to Polar Coordinates

Name ______________________

Date ____________ Period _____

Given the following rectangular coordinate

$$(x,y)$$

There is an equivalent polar coordinates (r,θ) such that...

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

$$\theta = \tan^{-1}\frac{y}{x}$$

$$-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$$

if (x,y) is in quadrant 2 or 3 add π to θ

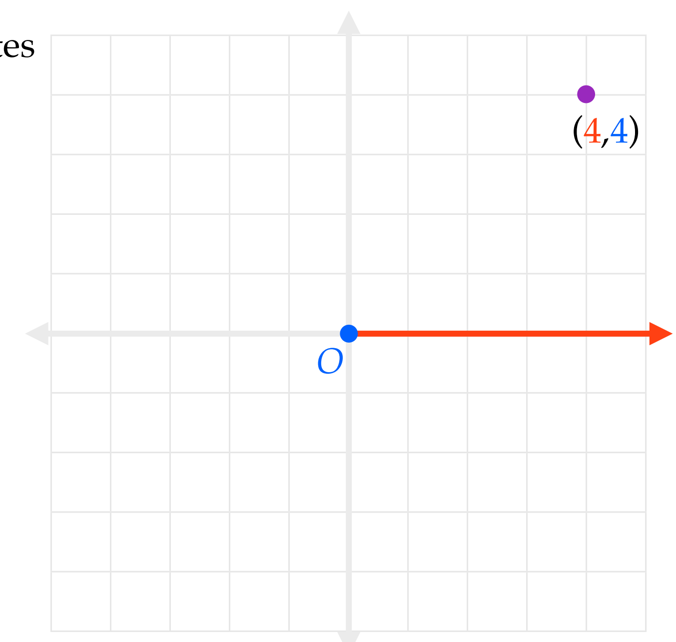
Convert the following rectangular coordinates to polar coordinates

$(4,4)$

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

$$\theta = \tan^{-1}\frac{y}{x}$$

$$-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$$



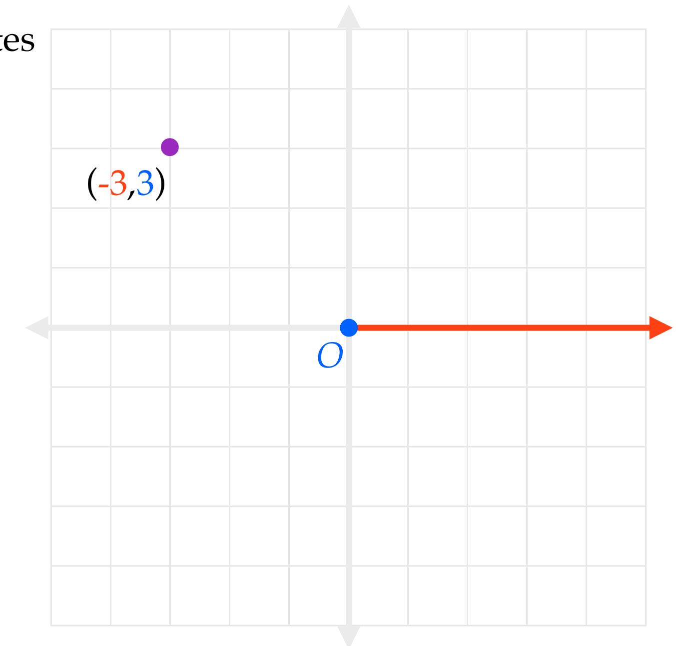
Convert the following rectangular coordinates to polar coordinates

$(-3,3)$

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

$\theta = \tan^{-1} \frac{y}{x}$

$-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$



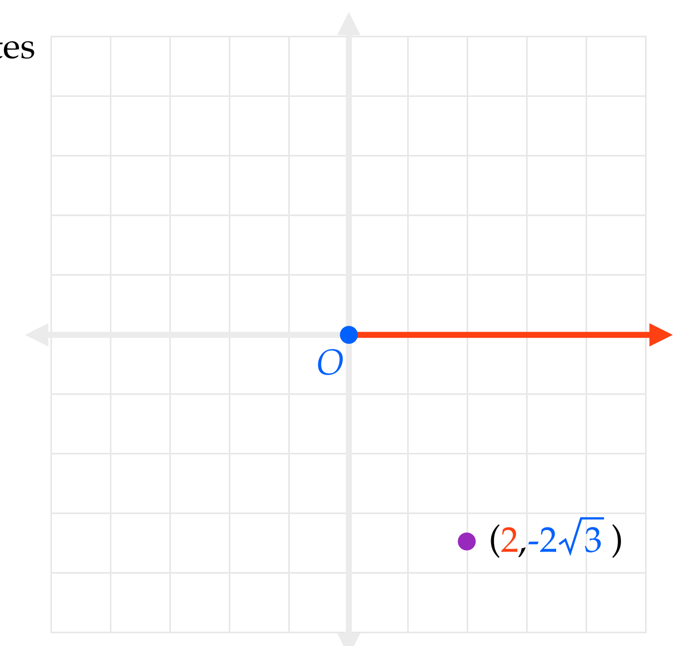
Convert the following rectangular coordinates to polar coordinates

$(2,-2\sqrt{3})$

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

$\theta = \tan^{-1} \frac{y}{x}$

$-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$



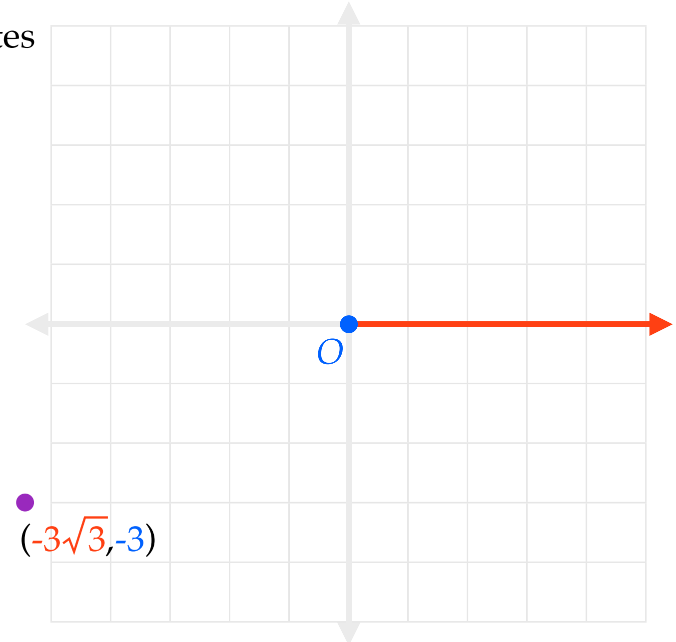
Convert the following rectangular coordinates to polar coordinates

$(-3\sqrt{3}, -3)$

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

$\theta = \tan^{-1} \frac{y}{x}$

$-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$



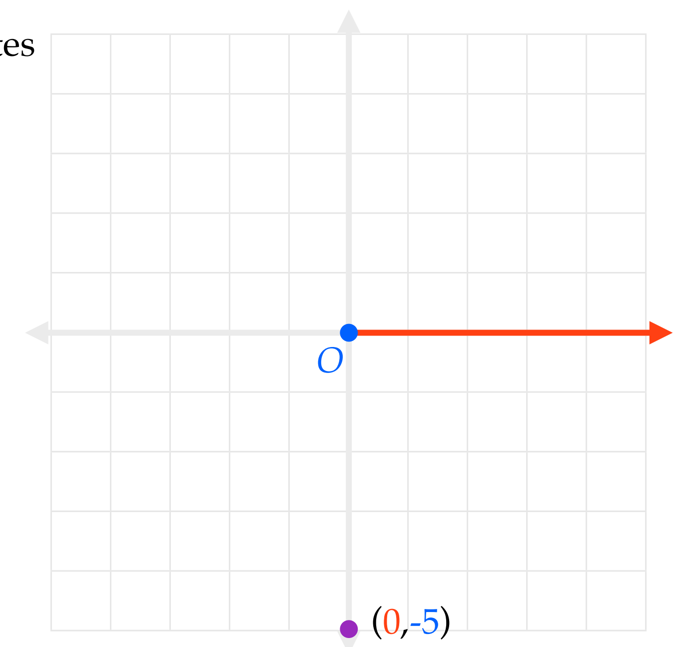
Convert the following rectangular coordinates to polar coordinates

$(0, -5)$

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

$\theta = \tan^{-1} \frac{y}{x}$

$-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$



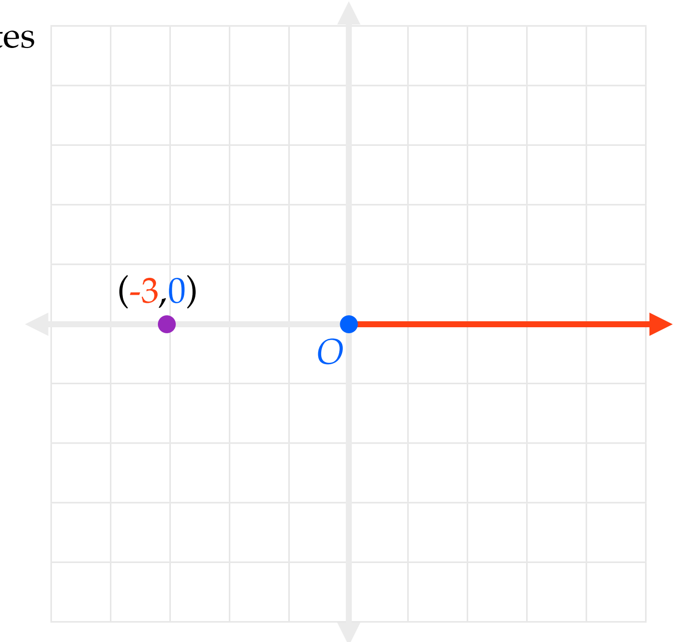
Convert the following rectangular coordinates to polar coordinates

(-3,0)

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

$\theta = \tan^{-1} \frac{y}{x}$

$-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$



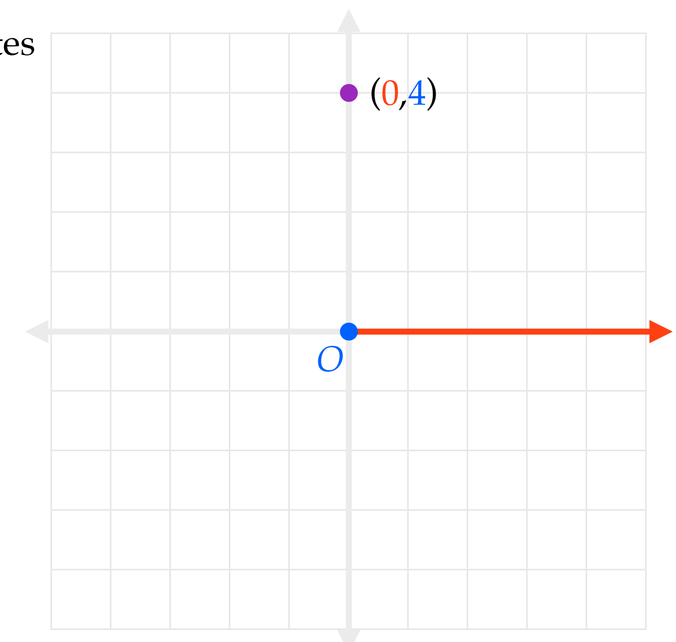
Convert the following rectangular coordinates to polar coordinates

(0,4)

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

$\theta = \tan^{-1} \frac{y}{x}$

$-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$



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