## Answer on Question \#45121 - Math - Analytic Geometry

Question. Find the rectangular coordinates of the point with the polar coordinates ( $8, \frac{3}{2} \pi$ ).
Solution. Recall that the relation between rectangular ( $x, y$ ) and polar coordinates $(r, \phi)$ is given by the following formulas:

$$
x=r \cos \phi, \quad y=r \sin \phi .
$$

In our problem

$$
r=8, \quad \phi=\frac{3}{2} \pi .
$$

Therefore

$$
\begin{aligned}
& x=r \cos \phi=8 \cdot \cos \left(\frac{3}{2} \pi\right)=8 \cdot 0=0, \\
& y=r \sin \phi=8 \cdot \sin \left(\frac{3}{2} \pi\right)=8 \cdot(-1)=-8
\end{aligned}
$$

Thus the rectangular coordinates of the point with the polar coordinates $\left(8, \frac{3}{2} \pi\right)$ are

$$
(0,-8) .
$$

Answer. (0, -8).

