## 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:

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

In our problem

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

Therefore

$$x = r \cos \phi = 8 \cdot \cos(\frac{3}{2}\pi) = 8 \cdot 0 = 0,$$
  
$$y = r \sin \phi = 8 \cdot \sin(\frac{3}{2}\pi) = 8 \cdot (-1) = -8$$

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

(0, -8).

**Answer.** (0, -8).