Answer on Question #63490 – Math – Analytic Geometry

Question

The terminal side lies in the third quadrant and is perpendicular to the line $3x + 5y = 0$?

Solution

The normal vector of the line $3x + 5y = 0$ is

$$\bar{n}_1(3,5).$$

Vector $\bar{n}_2(5,-3)$ is perpendicular to the vector $\bar{n}_1(3,5)$.
The equation of the terminal side:

$$5x - 3y = 0 \Rightarrow \frac{x}{3} = \frac{y}{5}$$

Angle:

$$\varphi = 180° + \tan^{-1}\frac{5}{3} = 180° + 59° = 239°.$$

Answer: $\varphi = 239°$.