# Answer on Question #83982 – Math – Analytic Geometry

## Question

Equation of one side of a square is $2x + 3y + 4 = 0$. If the center is $(1, 1)$ then find the equations of adjoined two sides of the square.

## Solution

The distance from the center to the given side is $h = \frac{|ax_0 + by_0 + c|}{\sqrt{a^2 + b^2}} = \frac{|2 \cdot 1 + 3 \cdot 1 + 4|}{\sqrt{2^2 + 3^2}} = \frac{9}{\sqrt{13}}$.

The center point doesn't lie on the side because $h \neq 0$.

The equation of the line through the point perpendicular to given side is $0 \equiv bx - ay - bx_0 + ay_0 := bx - ay + c_0 = 3x - 2y - 1$.

The equations of adjoined two sides are $bx - ay + c_0 \pm h\sqrt{b^2 + (-a)^2} = 0$, i.e. $3x - 2y + 8 = 0$ and $3x - 2y - 10 = 0$.

## Answer:

$3x - 2y + 8 = 0, \ 3x - 2y - 10 = 0$.