Conditions

slope intercept equation that is perpendicular to y=5x+3 and containing (-4,5)

Solution

$y = 5x + 3$ is an equation of straight line.

We have to use formula, which gives us a straight line, which goes through a defined point perpendicularly a defined straight line.

The slope of our equation $k = 5$. If we want to find a straight line, which is perpendicular to our line, we must calculate its slope by using formula: $k' = -\frac{1}{k} = -\frac{1}{5}$

Now, equation for our perpendicular is:

$$y = -\frac{1}{5}x + b, b - const$$

To find b we must use the condition that this perpendicular contains point (-4;5):

$$5 = -\frac{1}{5}(-4) + b, \Longrightarrow b = 5 - \frac{4}{5} = \frac{21}{5}$$

Answer

The slope $k' = -\frac{1}{5}$

Equation is: $y = -\frac{1}{5}x + \frac{21}{5}$

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