Task. How far is the point $(3, 1)$ from the line $5x + 12y = 1$?

Solution. To find the distance from a point $A(\bar{x}, \bar{y})$ from the line

$$ax + by + c = 0$$

we should substitute the coordinates of point A into the normal equation of the line, i.e. the equation divided by $\sqrt{a^2 + b^2}$:

$$dist = \frac{a\bar{x} + b\bar{y} + c}{\sqrt{a^2 + b^2}}.$$

In our case the distance from point $(3, 1)$ to the line $5x + 12y - 1 = 0$ is equal to

$$dist = \frac{|5 * 3 + 12 * 1 - 1|}{\sqrt{5^2 + 12^2}} = \frac{26}{\sqrt{25 + 144}} = \frac{26}{\sqrt{169}} = \frac{26}{13} = 2.$$