Assignment - 11.10.2.8

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CONTENTS

I. PROBLEM

The perpendicular distance from the origin is 5 units and the angle made by the perpendicular with the positive x-axis is $30°$.Find the equation of the line ?

II. SOLUTION

$$\mathbf{m} = \begin{pmatrix} 1 \\ \tan 30° \end{pmatrix} \tag{1}$$

$$\mathbf{n} = \begin{pmatrix} 1 \\ \frac{1}{\sqrt{3}} \end{pmatrix} \tag{2}$$

$$\mathbf{P} = \frac{10}{\sqrt{3}} \tag{3}$$

Equation

$$\mathbf{n}^{\top}\left(\mathbf{x} - \mathbf{P}\right) = 0 \tag{4}$$

$$\begin{pmatrix} 1 & \frac{1}{\sqrt{3}} \end{pmatrix}\mathbf{x} = \frac{10}{\sqrt{3}} \tag{5}$$

$$\begin{pmatrix} \sqrt{3} & 1 \end{pmatrix}\mathbf{x} = 10 \tag{6}$$