LaTeX 11.10.1.7

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CLASS 11, EXERCSE 10.1

Q7. Find the slope of the line, which makes an angle of 30° with the positive direction of y-axis measured anticlockwise.

Solution: Direction vector of y-axis is $\mathbf{y} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$ and direction vector of line is $\mathbf{l} = \begin{pmatrix} 1 \\ m \end{pmatrix}$.

$$\cos(30°) = \frac{\mathbf{l}^T \mathbf{y}}{|\mathbf{l}||\mathbf{y}|} = \frac{m}{\sqrt{1 + m^2}} \tag{1}$$

$$\frac{m}{\sqrt{1 + m^2}} = \frac{\sqrt{3}}{2} \tag{2}$$

$$m = \pm\sqrt{3} \tag{3}$$