Coordinates For the plane

Sketch
1- (1,2 )
2- (0 , 1)
3- (-1 , -3 )

Show That \( \sin^2(\theta) + \cos^2(\theta) = 1 \)

Prove: - we have \( \sin(\theta) = \frac{y}{r} \) \( \Rightarrow y = r \sin(\theta) \)

\( \cos(\theta) = \frac{x}{r} \) \( \Rightarrow x = r \cos(\theta) \)

\( x^2 + y^2 = r^2 \) Equation of Circle

\( [r \cos(\theta)]^2 + [r \sin(\theta)]^2 = r^2 \)

\( r^2 \cos^2(\theta) + r^2 \sin^2(\theta) = r^2 \Rightarrow r^2(\cos^2(\theta) + \sin^2(\theta)) = r^2 \)

\( \therefore \cos^2(\theta) + \sin^2(\theta) = 1 \)

The Slope of a straight line

Given a line \( (L) \) Passing through the point \( (x_1, y_1) \) and \( (x_2, y_2) \) if \( (M) \) is the slope

\( m = \tan(\theta) = \frac{\Delta y}{\Delta x} \)

\( m = \frac{y_2 - y_1}{x_2 - x_1} \)