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Matric No: 19/ENG07/022

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Questions

1) find the equation of the tangent at the point (1, 0) on the Circle

$x^2 + y^2 - 5x - y + 4 = 0$

Solution

$x^2 + y^2 + 2gx + 2fy + c = 0$

$g = -5/2$, $2gx = -5x$, $2fy = -y$ $f = -1/2$

So, the centre of the circle is $(5/2, 1/2)$

$m_1 = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\frac{1}{2} - 0}{\frac{5}{2} - 1}$

$m_1 = 1/2 \div 3/2$ $m_1 = 1/3$

By tangent $m_1 m_2 = -1$ $m_2 = -3$

Hence equ is $y - y_1 = m(x - x_1)$

$y - 0 = -3(x - 1)$

$y = -3x + 1$ //

2) find the equation of the tangent at the point (1, 0) on the circle

$x^2 + y^2 - 12x - 12y + 47 = 0$

Solution

$2gx = -12x$ $2fy = -12y$ $g = -6$ $f = -6$

Centre of circle $\Rightarrow (6, 6)$

$m_1 = \frac{y_2 - y_1}{x_2 - x_1} \Rightarrow \frac{6 - 0}{6 - 1}$ $m_1 = 6/5$

$m_1 m_2 = -1$ $m_2 = -5/6$ equ $\Rightarrow y - y_1 = m_2(x - x_1)$

$y - 0 = -5/6(x - 1)$ $y = -5/6 x + 5/6$ //

3) find the equation of the tangent at the point (1, 0) on the circle

$x^2 + y^2 - 8x + 14y + 40 = 0$

Solution

$2gx = -8x$ $g = -4$ $2fy = 14y$ $f = 7$

Centre of Circle (4, -7)

$$m_1 = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-7}{3}$$

$$m_2 = 3/7$$

equ $y - 0 = 3/7 (x - 1)$

$$y = 3/7 x - 3/7$$