The Chidera
Computer Engr
19/ENG02/020
MAT 102

1. Point (1, 0)

Equation of the circle $x^2 + y^2 - 5x - y + 4 = 0$

$\frac{dy}{dx}(2y-1) = 5 - 2x$

$\frac{dy}{dx} = \frac{5-2x}{2y-1}$

when $x = 1$, $y = 0$

$m = \frac{5-2(1)}{2(0)-1}$

$= \frac{5-2}{0-1}$ $= \frac{3}{-1}$ $= -3$

$y - y_1 = m(x - x_1)$

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

$y = -3x + 3$ (equation of the tangent)

2. Point (1, 0)

Equation of the circle : $x^2 + y^2 - 12x - 12y + 47 = 0$

$2x + 2y\,dy/dx - 12 - 12\,dy/dx = 0$

$\frac{dy}{dx}(2y - 12) = 12 - 2x$

$\frac{dy}{dx} = \frac{12-2x}{2y-12}$

$\frac{dy}{dx} = \frac{6-x}{y-6}$

When $x = 1$, $y = 0$

$m = \frac{6-1}{0-6}$ $= 5/-6$

$y - y_1 = m(x - x_1)$

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

$y = -5/6 x + 5/6$

$6y = -5x + 5$ (equation of the tangent)

3. Point (1,0)

Equation of the circle $x^2 + y^2 - 8x + 14y + 40 = 0$

$$2x + 2y\frac{dy}{dx} - 8 + 14\frac{dy}{dx} = 0$$

$$\frac{dy}{dx}(2y + 14) = 8 - 2x$$

$$\frac{dy}{dx} = \frac{8 - 2x}{2y + 14}$$

when $x = 1, y = 0$

$$m = \frac{8 - 2(1)}{2(0) + 14} = \frac{8 - 2}{0 + 14} = \frac{6}{14} = \frac{3}{7}$$

$y - y_1 = m(x - x_1)$

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

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

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

(equation of the tangent)