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19/ENG05/059
Mechatronics
MAT 102.

1. Tangent of Circle at point (1, 0) on Circle
$x^2+y^2-5x-y+4=0$

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

$\frac{2gx}{2x} = \frac{-5x}{2x}$ $\frac{2fy}{2y} = \frac{-y}{2y}$

$g = -5/2$ $f = -1/2$

Equation of tangent
$= xx_1 + yy_1 + g(x+x_1) + f(y+y_1) + c = 0$

$\therefore$ at $(1, 0)$

~~$x(1) + y(0) + gc$~~

$= x(1) + y(0) + (-5/2)(x+1) + (-1/2)(y+0) + 4 = 0$

$= x + 0 - 5/2(x+1) - 1/2(y+0) + 4 = 0$

$\left[x - \frac{5x}{2} - \frac{5}{2} - \frac{y}{2} + 0 + 4 = 0\right] \times 2$

$2x - 5x - 5 - y + 0 + 8 = 0$

$2x - 5x - 5 - y + 8 = 0$

$(-3x - y + 3 = 0)^{-1} \Rightarrow$ equation of tangent.

$3x + y - 3 = 0$

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

Compasing

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

$\frac{2gx}{2x} = \frac{-12x}{2x}$ $\quad$ $\frac{2fy}{2y} = \frac{-12y}{2y}$

$g=-6$ $\quad$ $f=-6$

equation of tangent at $I, 0$

$= xx_1+yy_1+g(x+x_1)+f(y+y_1)+C=0$

$= x(I)+y(0)+[-6[x+I)]+[-6[y+0]]+47=0$

$x+0-6x-6-6y+0+47=0$

$x-6x-6-6y+47=0$

$(-5x-6y+41=0)\times -1$

$= 5x+6y-41=0$ //

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

Compasing

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

$\frac{2gx}{2x} = \frac{-8x}{2x}$ $\quad$ $\frac{2fy}{2y} = \frac{-14y}{2y}$

$g=-4$ $\quad$ $f=7$

equation of tangent at $I, 0$

$= xx_1+yy_1+g(x+x_1)+f(y+y_1)+c=0$

$x(I)+y(0)-4[x+I)+7(y+0)+40=0$

$x+0-4x-4+7y+0+40=0$

$(-3x+7y+36=0)\times -1$

$3x-7y-36=0$