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Matric No: 19/ENG06/027.

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**Question**

(1) Find the equation of the tangent at the point (1,0) on the circle  x2+ y2 - 5x - y + 4 = 0

(2) (1) Find the equation of the tangent at the point (1,0) on the circle  x2+ y2 - 12x - 12y + 47 = 0

(3) (1) Find the equation of the tangent at the point (1,0) on the circle  x2+ y2 - 8x  + 14y + 40 = 0

**Solution**

**(1)**

 x2+ y2 - 5x - y + 4 = 0

2x + 2y – 5 - = 0

2y - =5 – 2x

(2y – 1) = 5 -2x

=

At (1, 0), = = =0

Let = m

m =

5 – 2x = m ( 2y -1)

5 – 2x = 2ym –m

**(2)**

x2+ y2 - 12x - 12y + 47 = 0

2x + 2y – 12 -12 + 0 = 0

2y – 12

(2y – 12) = 12 – 2x

=

At (1, 0), = =

Let = m

m =

-5(2y-12) = 6(12-2x)

-10y + 60 = 72 – 12x

60 -72 + 12x = 10y

10y = 12x -12

5y = 6x – 6

y = -

**(3)**

x2+ y2 - 8x  + 14y + 40 = 0

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

2y - 14 = 8-2x

(2y-14) = 8-2x

=

At (1, 0), =

= = = -

Let = m

m =

=

-3(2y-14) = 7(8 -2x)

-6y + 42 = 56 -14x

14x – 56 + 42 = 6y

14x -14 = 6y

y =

y =