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 MATH 102 GENERAL MATHEMATICS II
 AERONAUTICAL ENGINEERING
 18/ENG09/004
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1. Find the Centre and Radius of the circle $x^2 + y^2 + 2x + 6y + 6 = 0$

Solution

$$x^2 + y^2 + 2x + 6y + 6 = 0$$

Format of the radius and Centre of a circle

$$(x-h)^2 + (y-k)^2 = r^2$$

$$x^2 + 2x + y^2 + 6y + 6 = 0$$

$$x^2 + \left(\frac{2}{2}\right)^2 + \left(\frac{6}{2}\right)^2$$

$$x^2 + 2x + 1 + y^2 + 6y + 9 + 6 = 0$$

$$x^2 + 2x + 1 + y^2 + 6y + 9 = -6 + 9 + 1$$

$$x^2 + 2x + 1 + y^2 + 6y + 9 = -4$$

$$(x-1)^2 + (y-3)^2 = -2$$

\therefore Centre of a circle $= (h, k) = (-1, -3)$

and $r = -2$

Find the Centre and Radius of the circle $x^2 + y^2 - 4x + 10y - 8 = 0$

$$x^2 + y^2 - 4x + 10y - 8 = 0$$

$$x^2 - 4x + y^2 + 10y - 8 = 0 \quad \Rightarrow \quad x^2 - 4x + 4 + y^2 + 10y + 25 - 9$$

$$(x-2)^2 + (y+5)^2 = 8 + 25 + 4$$

$$(x-2)^2 + (y+5)^2 = 37$$

Centre of a circle $= (h, k) = (-2, -5)$

Radius $(r) = 6.083$