Q : Find the solution of the following equation with respect to θ:

$$Bcos\theta + Bsin\theta + C = 0$$

A :

let $x_1 = cos\theta$ and $x_2 = sin\theta$, then the solution is given by the intersection of the circle and the line:

$$x_1^2 + x_2^2 = 1$$

$$Acos\theta + Bsin\theta + C = 0$$

We reformulate the equations in a parametric form:

$$|x|^2 = 1$$

$$x(t) = a + tb$$

where $x = (x_1, x_2)$, $a = (0, -C/B)$, $b = (-C/A, C/B)$, and t is a parameter. The intersection points satisfy the following equation:

$$|a + tb|^2 = 1$$

which can be solved for t to find the intersection points:

$$t_{1,2} = \frac{-a \cdot b \pm \sqrt{(a \cdot b)^2 - |b|^2(|a|^2 - 1)}}{|b|^2}$$