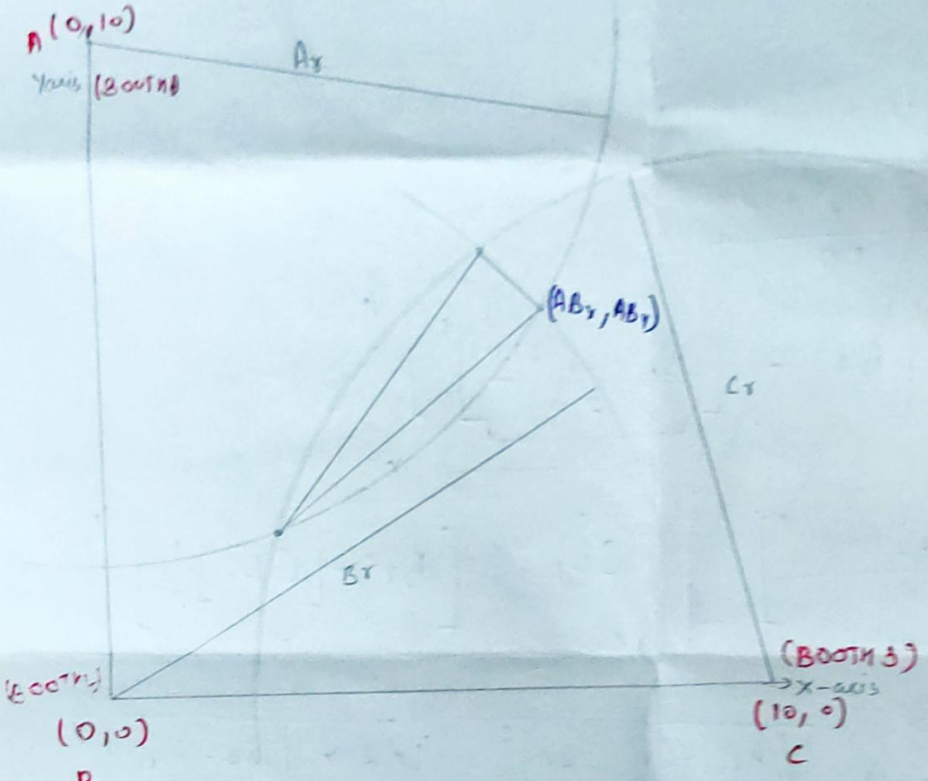
PROXIMITY EQATION LOGIC

INTERSECTION OF 3 CIRCLES



$$A :- (x-0)^2 + (y-10)^2 = Ar^2$$

$$B :- x^2 + y^2 = Br^2$$

$$C :- (x-10)^2 + (y-0)^2 = Cr^2$$

Eq A

$$x^2 + y^2 + 100 - 20y = Ar^2 \quad -(1)$$

Eq B

$$x^2 + y^2 = Br^2 \quad -(2)$$

Eq C

$$x^2 + 100 - 20x + y^2 = Cr^2 \quad -(3)$$

SOLVING (1) & (2)

$$ABy \equiv y = \frac{Br^2 - Ar^2 + 100}{20}$$

ABx : $x = \left[B_2^2 - \left[\frac{B_2^2 - A_2^2 + 100}{20} \right]^2 \right]^{1/2}$

y^2

$AB_y = \left[\frac{B_2^2 - A_2^2 + 100}{20} \right]$	$AB_x = \left[B_2^2 - [AB_y]^2 \right]^{1/2}$

SOLVING ② & ③

CBx $x = \frac{B_2^2 - C_2^2 + 100}{20}$

CBy $y = \left[B_2^2 - \left[\frac{B_2^2 - C_2^2 + 100}{20} \right]^2 \right]^{1/2}$

x^2

$CB_x = \left[\frac{B_2^2 - C_2^2 + 100}{20} \right]$	$CB_y = \left[B_2^2 - [CB_x]^2 \right]^{1/2}$

SOLVE ① & ③

AC $y = \frac{-\left[\frac{A_2^2 - C_2^2}{10} - 20 \right] \pm \sqrt{\left(\frac{A_2^2 - C_2^2}{10} - 20 \right)^2 - 4 \times 2 \times [100 - A_2^2]}}{4}$

$AC_x = \left(A_2^2 + 20 AC_y - 100 - (AC_y)^2 \right)^{1/2}$