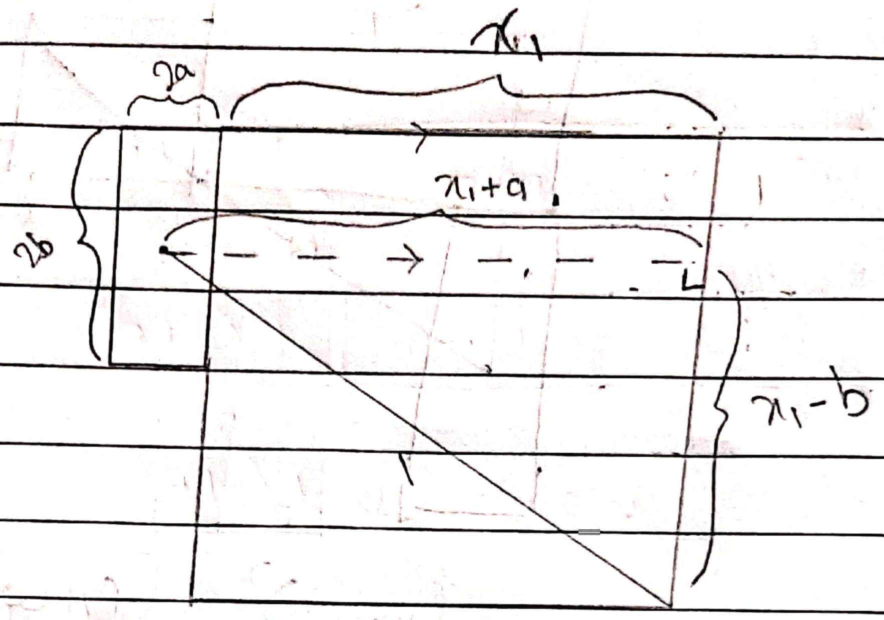


$$1 = (x_1+a)^2 + (x_1-b)^2$$

$$1 = x_1^2 + 2ax_1 + a^2 + x_1^2 - 2bx_1 + b^2$$

$$2x_1^2 + 2(a-b)x_1 + a^2+b^2-1 = 0$$

$$x_1 = \frac{-2(a-b) \pm \sqrt{4(a^2+b^2-2ab) - 8(a^2+b^2-1)}}{4}$$

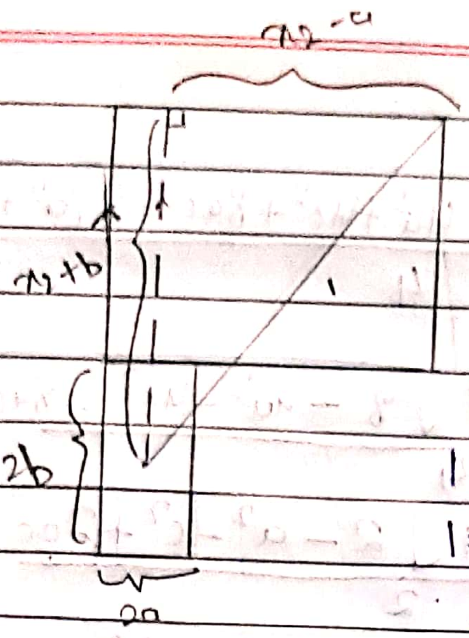
$$= \frac{2(b-a) \pm \sqrt{8-4a^2-4b^2-8ab}}{4}$$

$$= \frac{(b-a) \pm \sqrt{2-a^2-b^2-2ab}}{2}$$

$$x_1 = \frac{(b-a) + \sqrt{2-(a+b)^2}}{2}$$

considering +ve sign

x_1 has to +ve



$$1 = (x_2-a)^2 + (x_2+b)^2$$

$$1 = x_2^2 - 2ax_2 + a^2 + x_2^2 + 2bx_2 + b^2$$

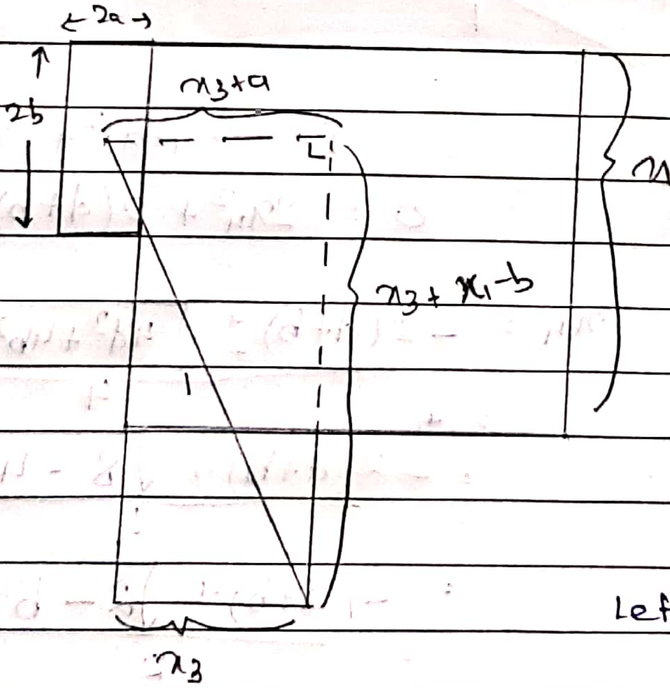
$$2x_2^2 + (2b-2a)x_2 + a^2 + b^2 - 1 = 0$$

$$x_2 = \frac{-(2b-2a) \pm \sqrt{4b^2+4a^2-8ab-8(a^2+b^2-1)}}{4}$$

$$= \frac{-(2b-2a) \pm \sqrt{8-4a^2-4b^2-8ab}}{4}$$

$$x_2 = \frac{(a-b) + \sqrt{2-(a+b)^2}}{2}$$

Taking +ve sign x_2 has to be +ve.



Let $c = x_1 - b$

$$1 = (x_3+a)^2 + (x_3+c)^2$$

$$0 = 2x_3^2 + 2ax_3 + a^2 + \cancel{2x_3^2} + 2c\cancel{b}x_3 + c^2 - 1$$

$$0 = 2x_3^2 + 2(a+c)x_3 + a^2 + c^2 - 1$$

Scanned with CamScanner

Page

$$x_3 = \frac{-2(a+c) \pm \sqrt{4a^2+4c^2+8ac-8(a^2+c^2-1)}}{4}$$

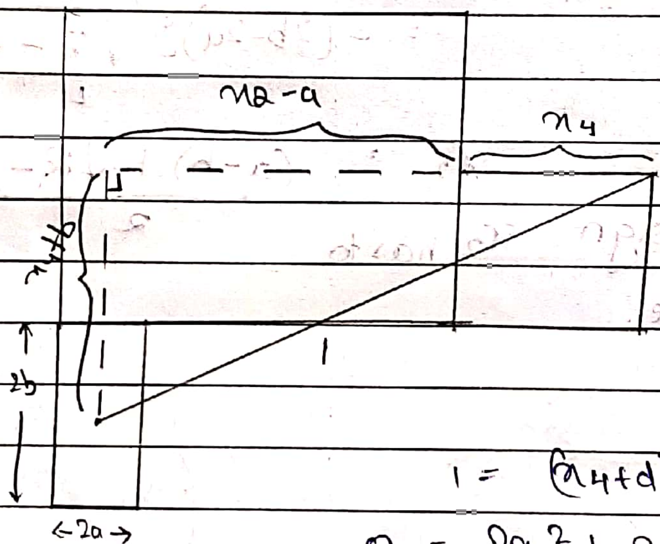
$$= \frac{-2(a+c) \pm \sqrt{8-4a^2-4c^2+8ac}}{4}$$

$$= \frac{-(a+c) + \sqrt{2-a^2-c^2+2ac}}{2}$$

$$x_3 = \frac{-(a+c) + \sqrt{2-(c-a)^2}}{2}$$

x_3 has to be +ve

where $c_1 = x_1 - b$



Let $d = x_2 - a$

$$1 = (x_4+d)^2 + (x_4+b)^2$$

$$0 = 2x_4^2 + 2(d+b)x_4 + b^2+d^2-1$$

$$x_4 = \frac{-2(d+b) \pm \sqrt{4d^2+4b^2+8bd-8b^2-8d^2+8}}{4}$$

$$= \frac{-2(d+b) + \sqrt{8-4b^2-4d^2+8bd}}{4}$$

$$= \frac{-(d+b) + \sqrt{2-b^2-d^2+2bd}}{2}$$

Taken +ve sign as x_4 has to +ve

$$x_4 = \frac{-(d+b) + \sqrt{2-(d-b)^2}}{2}$$

where $d = x_2 - a$