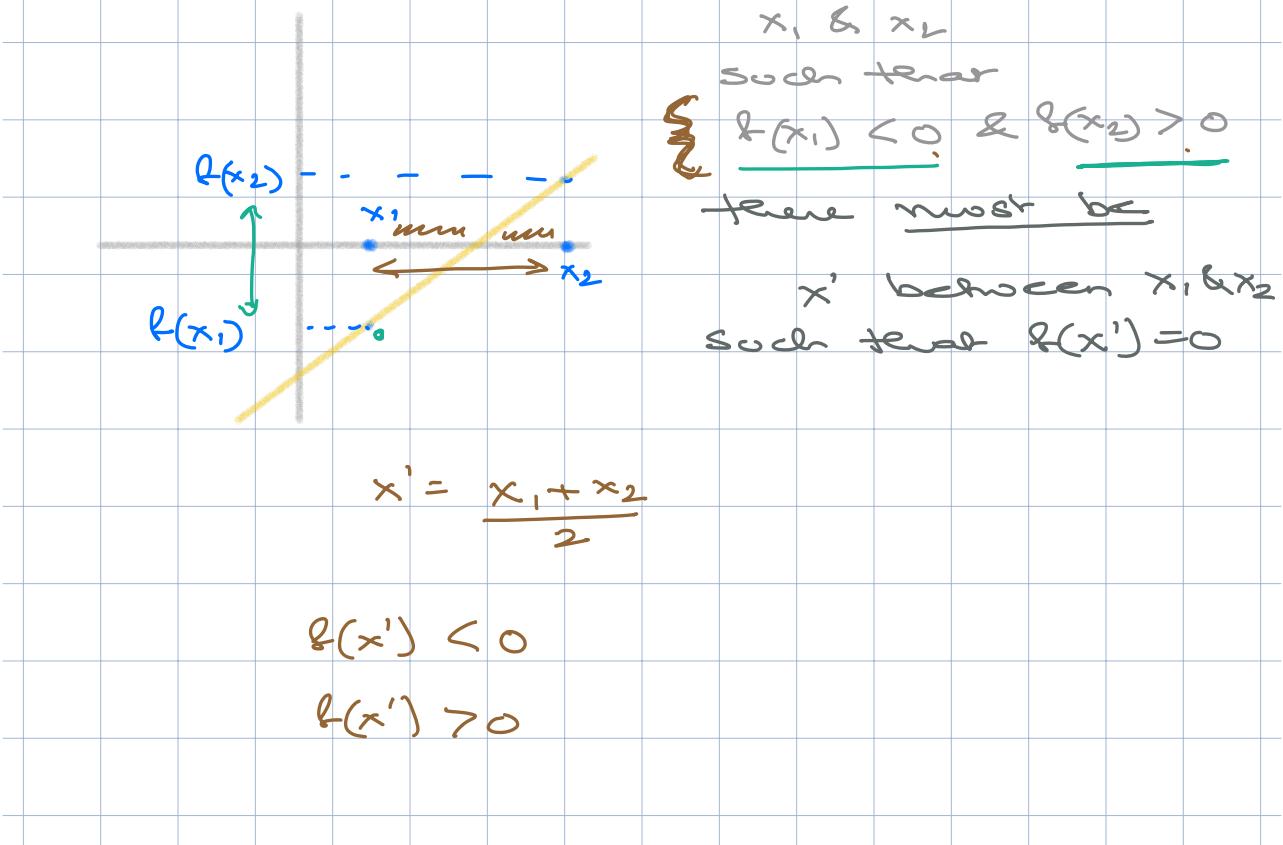


pair (x, y)

- (1) line = set of all points that satisfy the eq'
- (2) any point that satisfies the eq' lies on the line



$$y = x^2 - 2$$

$$x = \sqrt{2}$$

$$y = e^{2x^2 + s} - 10$$

$x_1 = \text{random.random}()$

$\text{random.rand int}()$

max

0 - 1

$r = np.random.rand()$

0 - 5

$x * s$

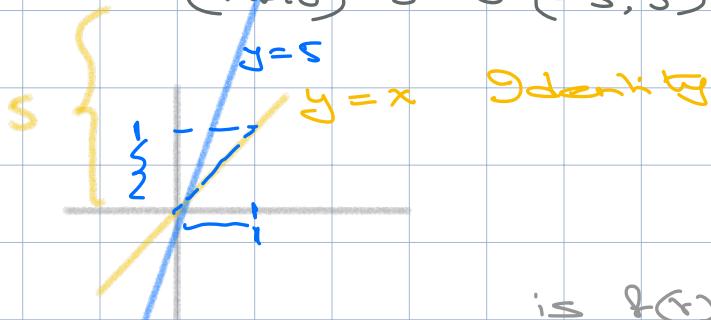
$-5 + s$

$(r + 10) - s$

$r \in (0, 1)$

$r + 10 \in (0, 10)$

$(r + 10) - s \in (-5, 5)$



is $f(r) < 0$

$r = np.random.rand() * 10 - s$

while $f(r) > 0$:

$r = n.r.v() * 10 - s$

$f(r) < 0$

$$f(p_1) < 0$$

$$f(p_2) > 0$$

$$p_3 = \frac{p_1 + p_2}{2}$$

$$\left\{ \begin{array}{l} \text{if } f(p_3) \cdot f(p_1) > 0 \\ \quad p_1 = p_3 \end{array} \right.$$

else

$$p_2 = p_3$$

① run for 10 iterations

print p_3

② run till $f(p_3) < \in 0.0001$

③ $|p_3_{\text{new}} - p_3_{\text{old}}| < \epsilon$