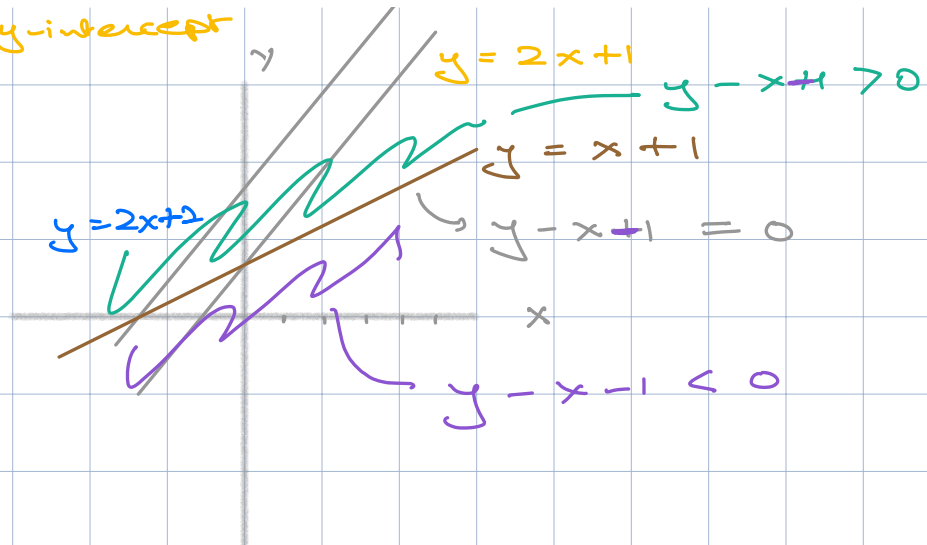
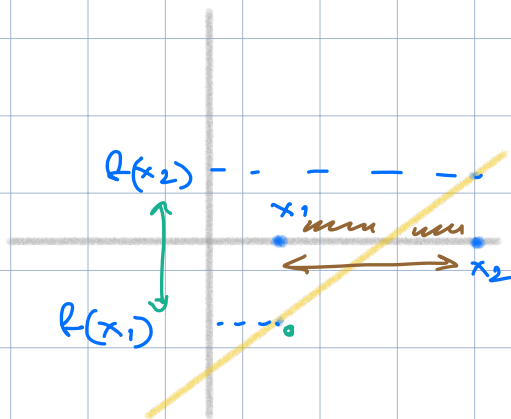


Slope m y -intercept c

$$y = \underline{2x} + \underline{1}$$



- (1) line = set of all ^{pair (x, y)} points that satisfy the eqⁿ
- (2) any point that satisfies the eqⁿ lies on the line



x_1 & x_2
such that
 $f(x_1) < 0$ & $f(x_2) > 0$
there must be

x' between x_1 & x_2
such that $f(x') = 0$

$$x' = \frac{x_1 + x_2}{2}$$

$$f(x') < 0$$

$$f(x') > 0$$

$$y = x^2 - 2$$

$$x = \sqrt{2}$$

$$y = e^{2x^2+5} - 10$$

`x1 = random.random()`

`random.randint()`

math

0-1

`r = np.random.rand()`

0-5

`r * 5`

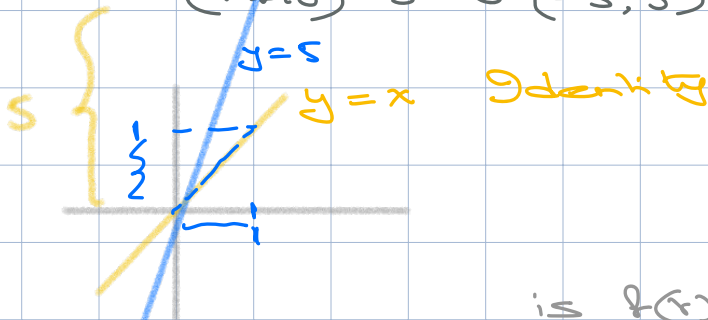
-5, 5

`(r * 10) - 5`

`r ∈ (0, 1)`

`r * 10 ∈ (0, 10)`

`(r * 10) - 5 ∈ (-5, 5)`



is $f(r) < 0$

`r = np.random.rand() * 10 - 5`

while $f(r) > 0$:

`r = n.r. r() * 10 - 5`
 \downarrow
 $f(r) < 0$

$$\underline{f(P_1) < 0}$$

$$f(P_2) > 0$$

$$P_3 = \frac{P_1 + P_2}{2}$$

$$\left\{ \begin{array}{l} \text{if } f(P_3) \cdot f(P_1) > 0 \\ \quad P_1 = P_3 \\ \text{else} \\ \quad P_2 = P_3 \end{array} \right.$$

① run for 10 iterations

print P_3

② run till $f(P_3) < \epsilon$ 0.0001

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