

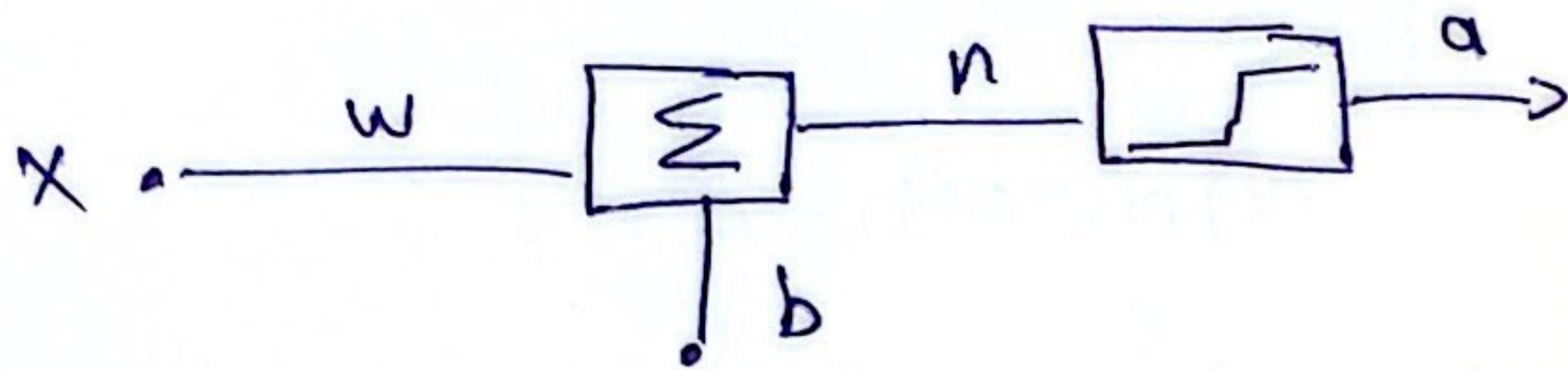
①

LEC 4

29-3-2022

شبكات عصبية

- الشبكة العصبية البسيطة : تكون لها مدخل واحد ومخرج واحد



input

$$a = f(wx + b)$$

$$a = 0 \quad n < 0$$

$$a = n \quad 0 \leq n \leq 1$$

$$a = 1 \quad n > 1$$

$$x = 4$$

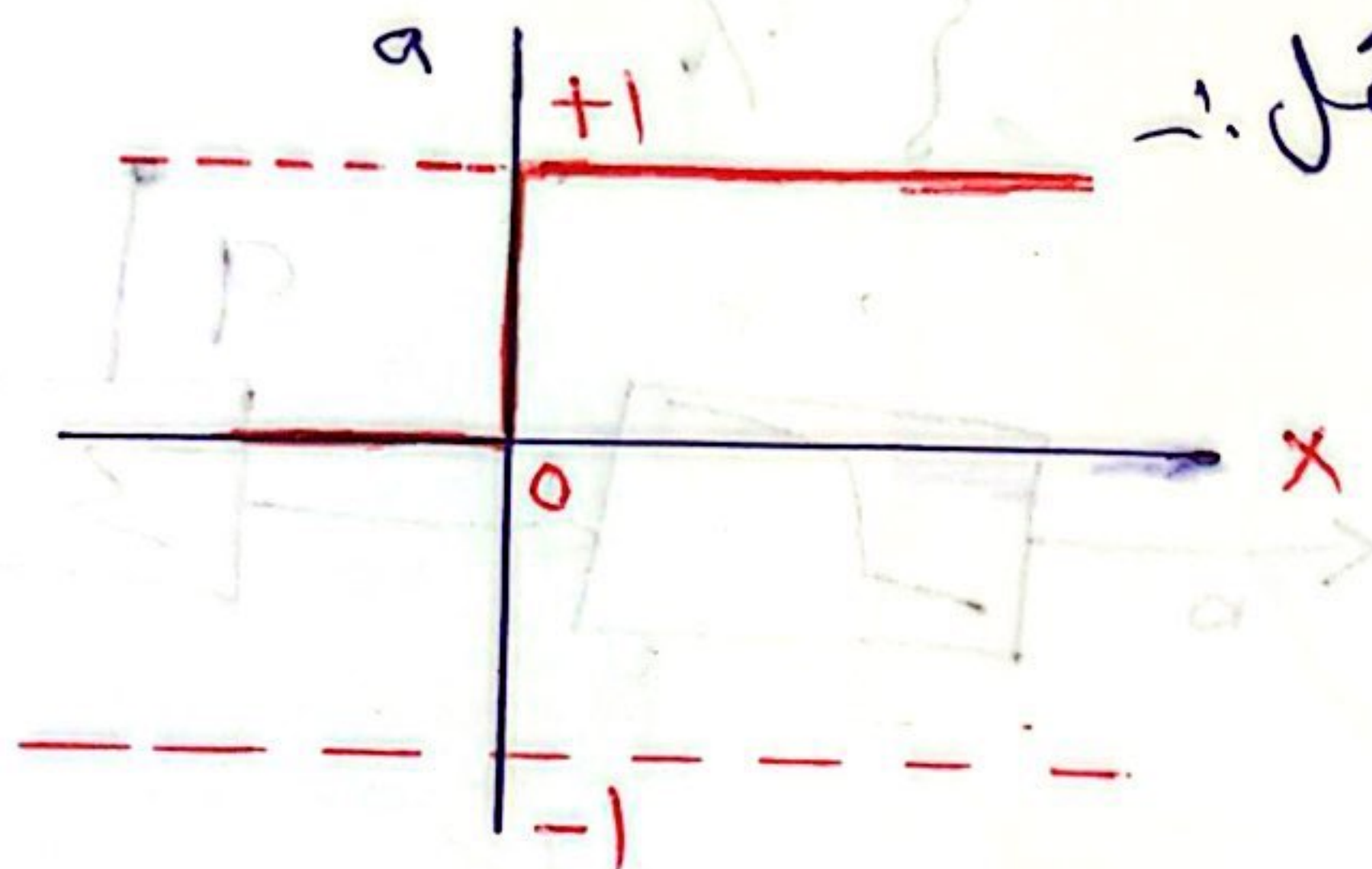
$$w = 0.3$$

$$b = 0.5$$

$$\therefore a = f(0.3 \times 4 - 0.5) \Rightarrow a = 0.7$$

مثلاً

- النوع ثوابح النقل



$$y = a = \text{hardlim}(x)$$

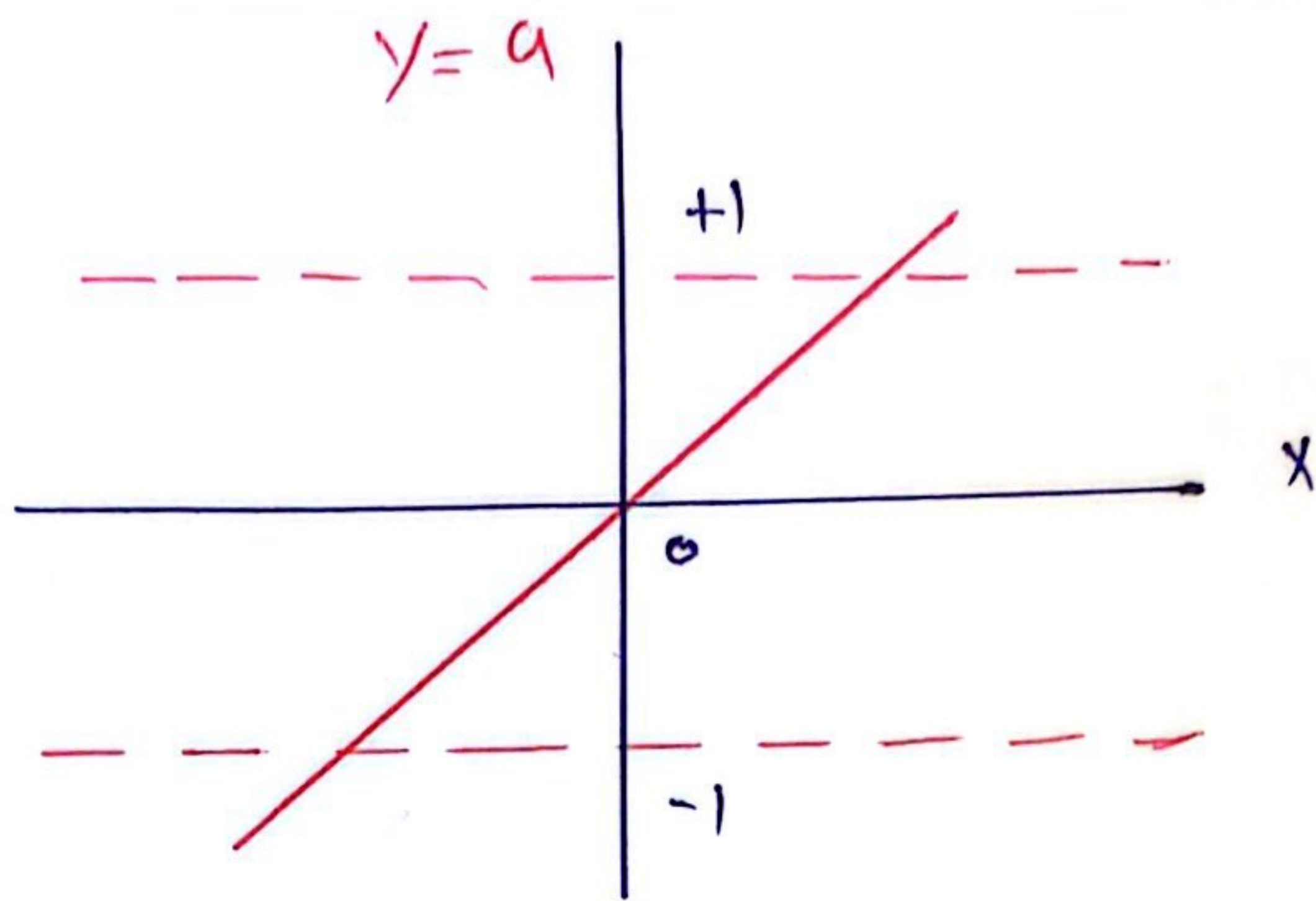
Hard Limit transfer Function

$$a = 0 \quad n < 0$$

$$a = 1 \quad n \geq 0$$

2

2.

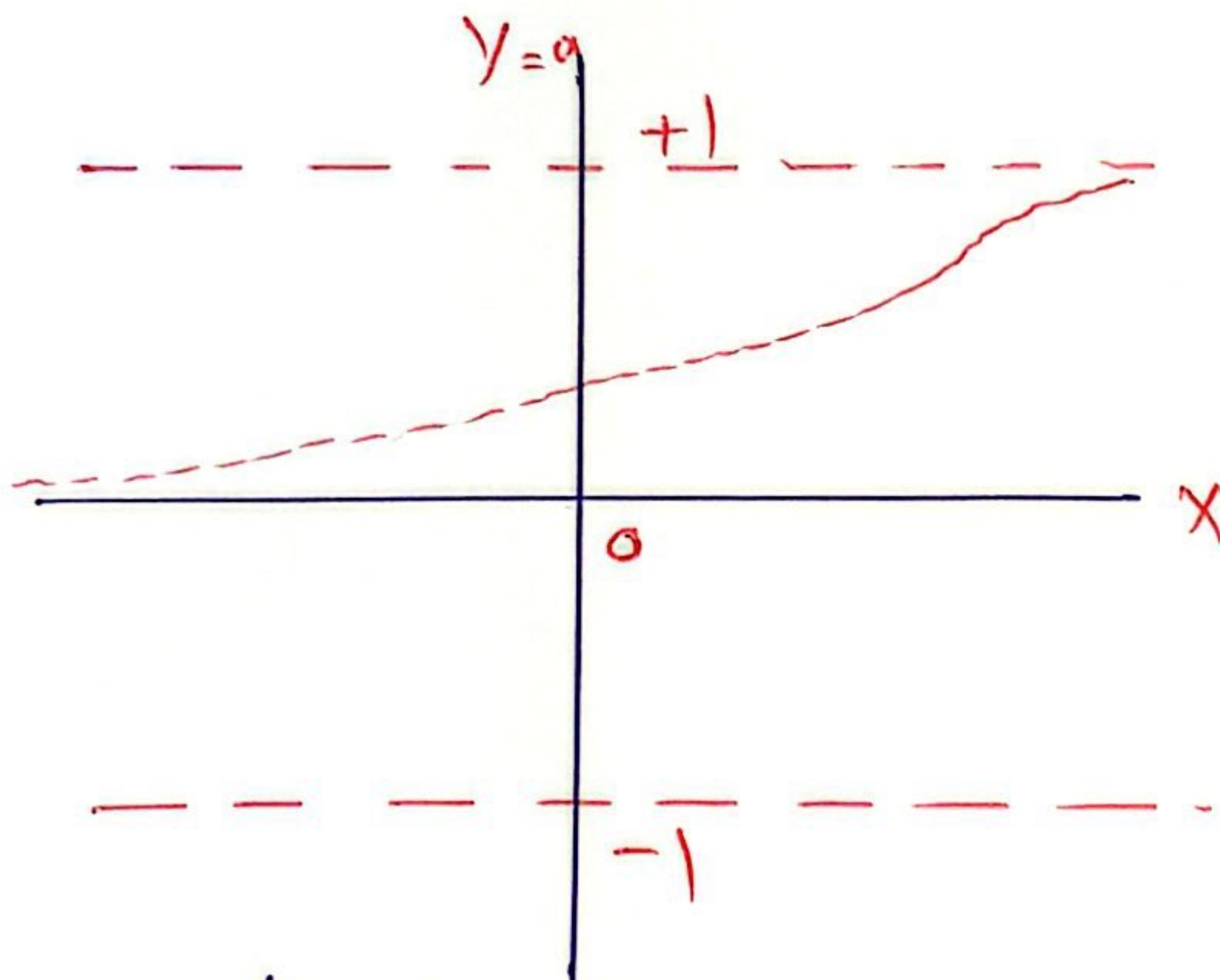


$$y = a = \text{purelin}(x)$$

Linear transfer function

$$y = x$$

3.



$$y = a = \text{logsig}(x)$$

$$y = \frac{1}{1 + e^{-x}}$$

* يكون مخرجه (1) وتكون قيمه مخرجه كبيرة أو قيمته (صفر) كما تكون قيمه سالبة كبيرة

③

$$- a = \text{hardlim}(6)$$

$$a = 1$$

$$- a = \text{hardlim}(-6)$$

$$a = 0$$

$$- a = \text{hardlim}(0)$$

$$a = 1$$

$$* \text{purelin}(q)$$

$$\text{ans} = q$$

$$* \text{purelin}(-q)$$

$$\text{ans} = -q$$

$$✓ a = \text{logsig}(100)$$

$$a = 1$$

$$✓ a = \text{logsig}(-100)$$

$$a = 3.720 \times 10^{-44}$$

$$✓ a = \text{logsig}(0.2)$$

$$a = 0.5498$$

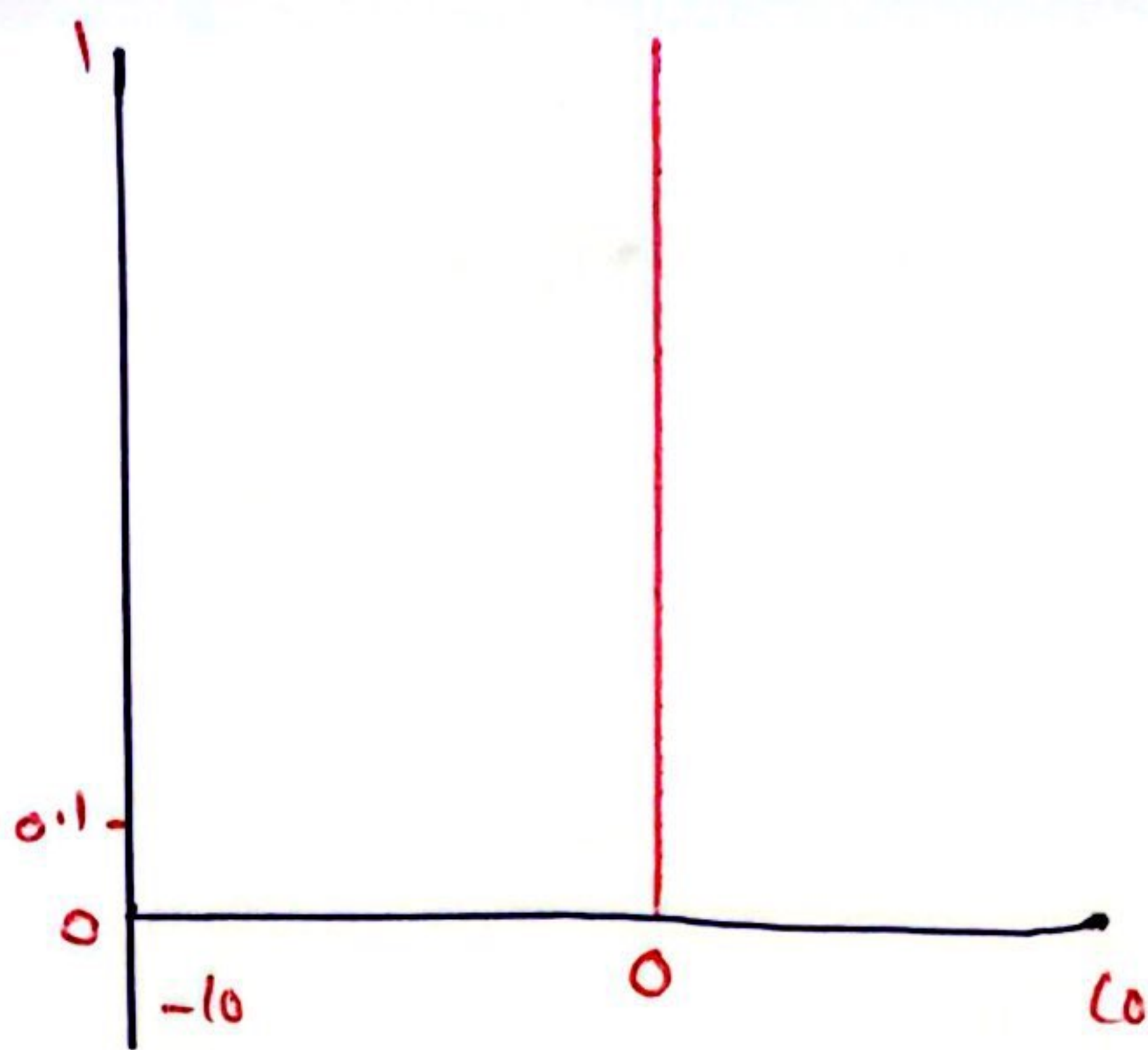
$$✓ a = \text{logsig}(-0.2)$$

$$a = 0.4502$$

④ $X = -10:0.1:10$

$a = \text{hardlim}(X);$

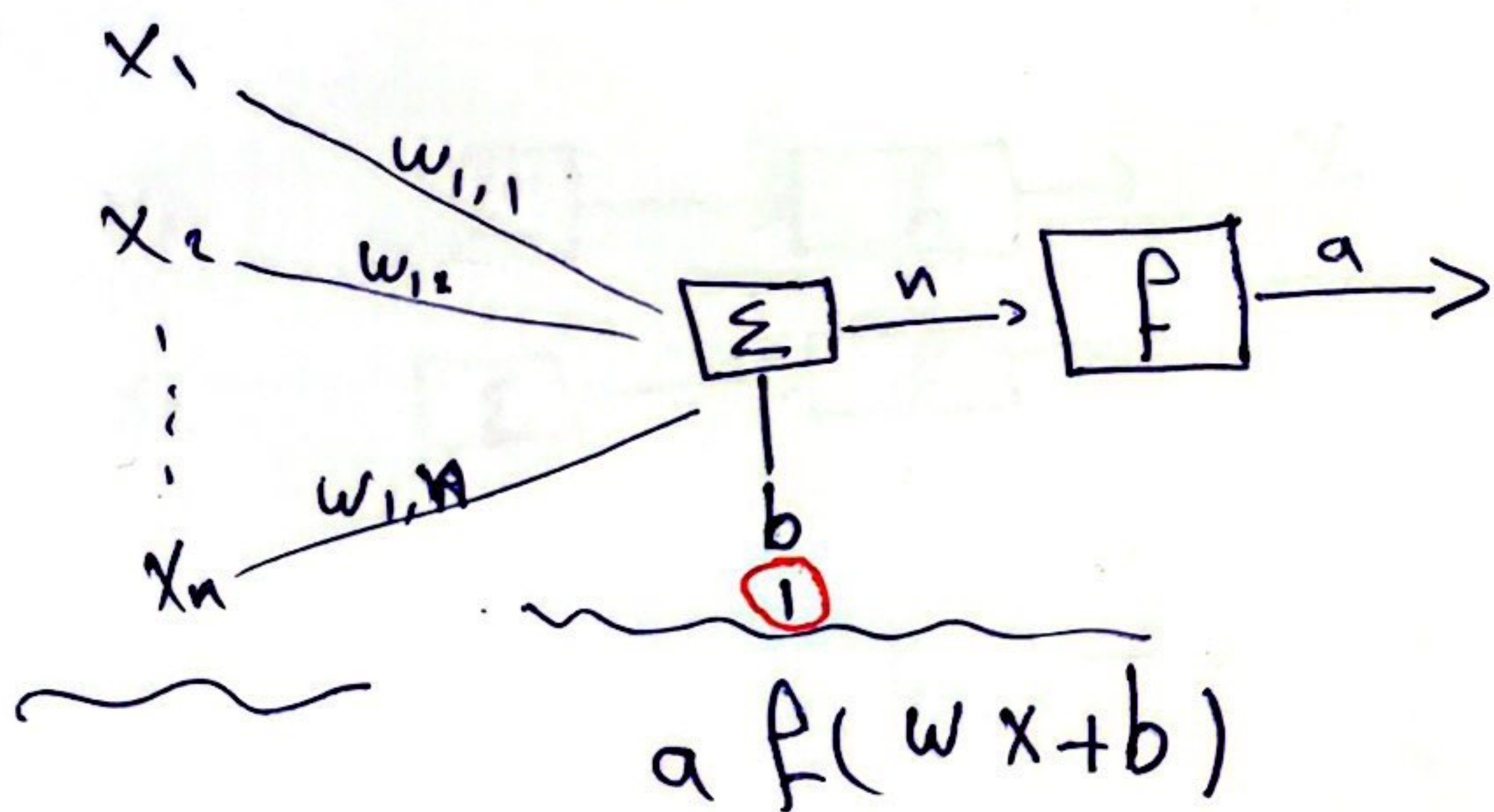
$\text{plot}(X, a)$



Logsig

واحد اربعة

- الشبكة العصبية متحدة الدخل ومخرجه واحد



نوع الـ matlab

$w = \text{rand}(1, 6)$

$W = 0.6991 \quad 0.8909 \quad 0.95 \quad 0.54 \quad 0.13 \quad 0.14$

$P = \begin{bmatrix} 6 & 2 & 3 & -12 & 5 & 6 \end{bmatrix}$

$w * P'$

$\text{ans} = ?$

$\Rightarrow n = w * P' + b \Rightarrow \text{hardlim}(n)$