هي الدالة التي يكون فيها المدى مساوي للمنطلق

for example:- (أي ان قيم X هي نفسها قيم Y)

$f(x) = x$ ; $f(0) = 0$ , $f(1) = 1$ and so on

## 3. Absolute Function

$$y = |x| = \begin{cases} -x & \text{if } x < 0 \\ x & \text{if } x \geq 0 \end{cases}$$

## 4. Integer Function

$y = [[x]]$ for example.

$y = f(3.1) = [[3.1]] = 3$

$f(-1.6) = [[-1.6]] = -2$

## 5. odd and Even Functions

we say that $f(x)$ is even function if:-

$f(-x) = f(x)$ ; The opposite, it is odd

Ex $f(x) = \dfrac{x^2}{x^4+1}$

Solu $f(-x) = \dfrac{(-x)^2}{(-x)^4+1} = \dfrac{x^2}{x^4+1} = f(x)$

$\therefore f(-x) = f(x)$

$f(x)$ is even function

Ex $f(x)=\frac{1}{x}$ ; $f(-x)=\frac{-1}{x}$

$\therefore f(x) \neq f(-x)$

$\therefore f(x)$ is not even ; $f(x)$ is odd function

There are functions that are neither even and odd ; for example:-

$f(x) = x^2 - 3x + 5$

1. $f(-x) = (-x)^2 - 3(-x) + 5 = x^2 + 3x + 5 \neq f(x)$

2. $-f(x) = -(x^2 - 3x + 5) = -x^2 + 3x - 5 \neq f(x)$

$\therefore f(x)$ is not odd and not even

ايجاد المدى والمجال من خلال الرسم وكالاتي:-

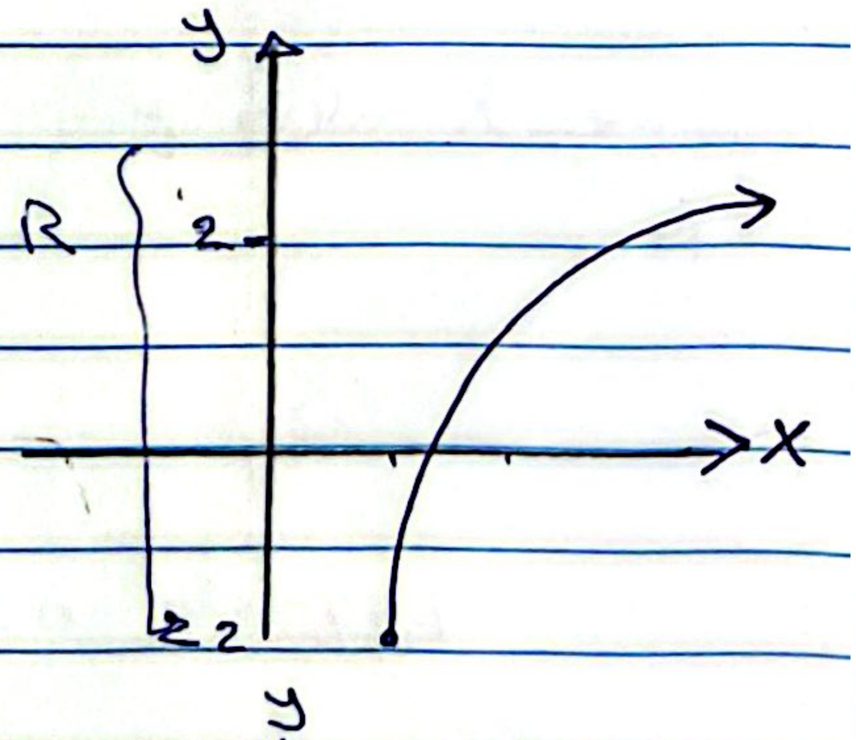
Ex Find the range to :-

1.

المدى $= [-2, \infty)$

$R = \{x : x \in R\} = [-2, \infty)$

or $R = \infty > y \geq -2$

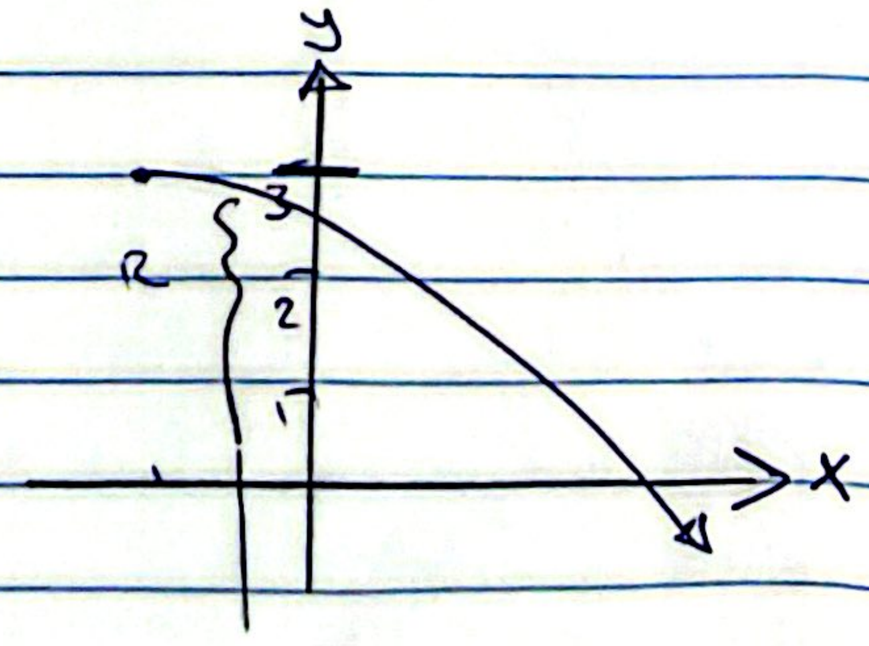



2.

المدى $= (-\infty, 3]$

$R = \{x : x \in R\} = [-\infty, 3)$

or $R = y \leq 3$

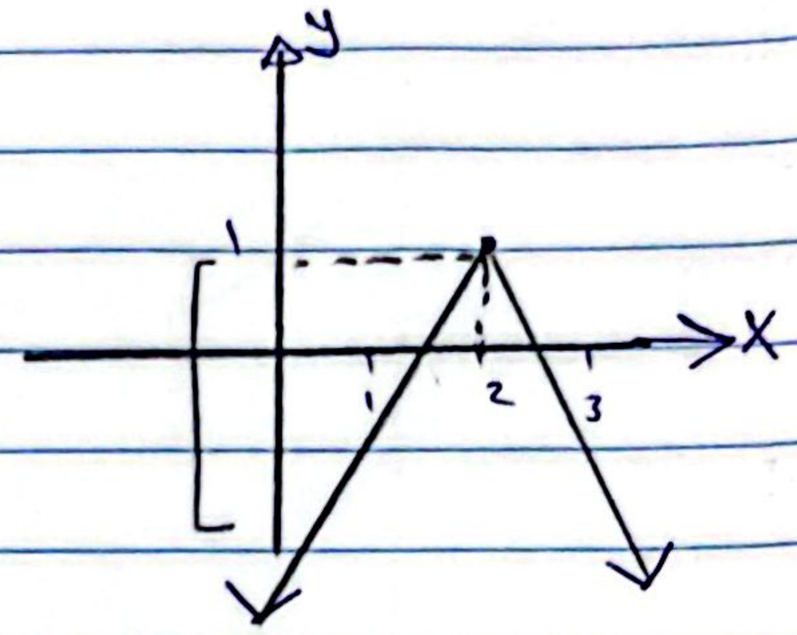


3.

المدى = $(-\infty, 1]$

$R = \{X : X \in R\} = (-\infty, 1]$

or $R = y < 1$

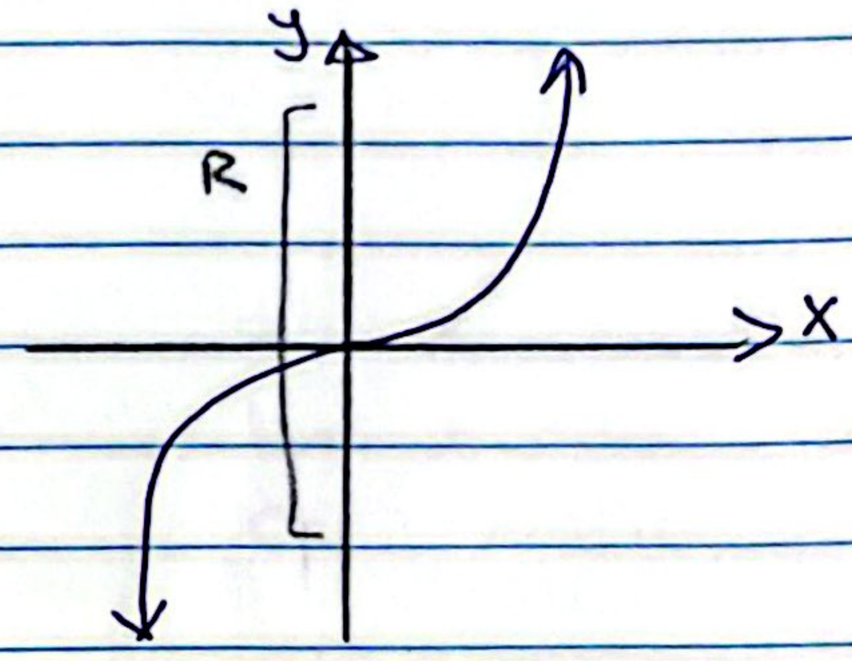



4.

المدى $= (-\infty, \infty)$

$R = \{X : X \in R\} = (-\infty, \infty)$

or $y = R$




Ex Find the Range to... إيجاد المدى جبرياً

1. $y = \dfrac{X+1}{X-2}$ ; $X \neq 2$

$D = R - \{2\}$

Soly نجد X بدلالة y

$Xy - 2y = X + 1$

$Xy - X = 2y + 1$

$X(y-1) = 2y + 1$

$X = \dfrac{2y+1}{y-1}$ ; $y - 1 \neq 0 \Rightarrow y \neq 1$

$R = \{y : y \in R ; 1\}$

المدى