## الدالة الجذرية

Find $D_f$ and $R_f$ and sketch

Ex:- $f(x) = \sqrt[2]{x}$

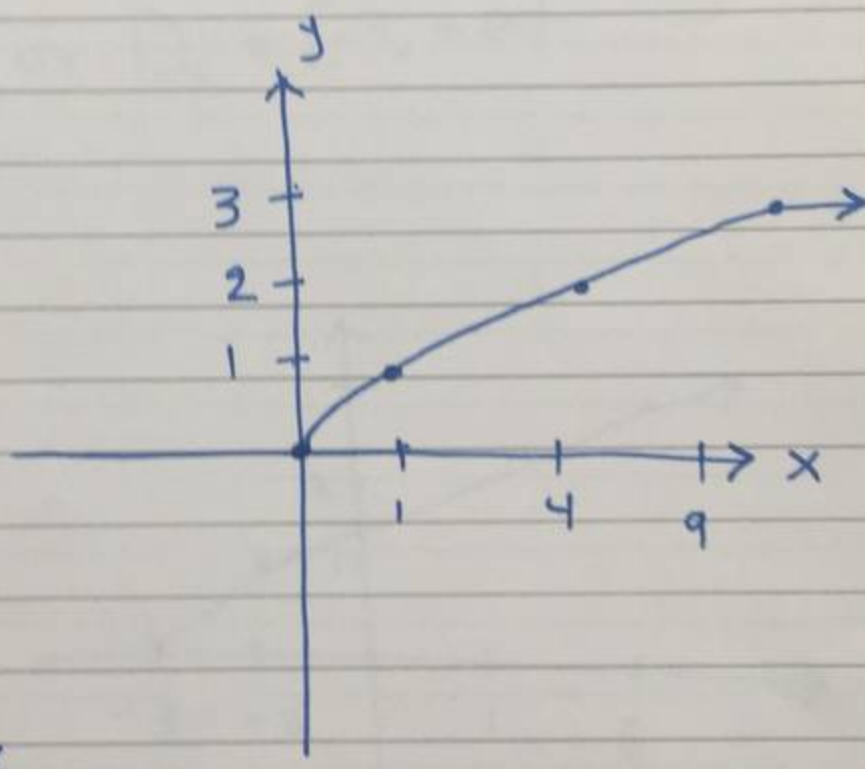
Sol

$D_f = \{x : x \geq 0\}$

or $D_f \rightarrow x \in [0, +\infty)$

حتى اوجد Range لهذه الدالة

| x | y |
|---|---|
| 0 | 0 |
| 1 | 1 |
| 4 | 2 |
| 9 | 3 |




$\therefore R_f = \{y : y \geq 0\}$

or $y \in [0, +\infty)$

Hw Ex:- Find $D_f$, $R_f$ and sketch the function

$f(x) = -\sqrt{x}$

Ex 2 :: sketch the function and find Domain and Range for the function

$$f(x) = \sqrt{x+3}$$

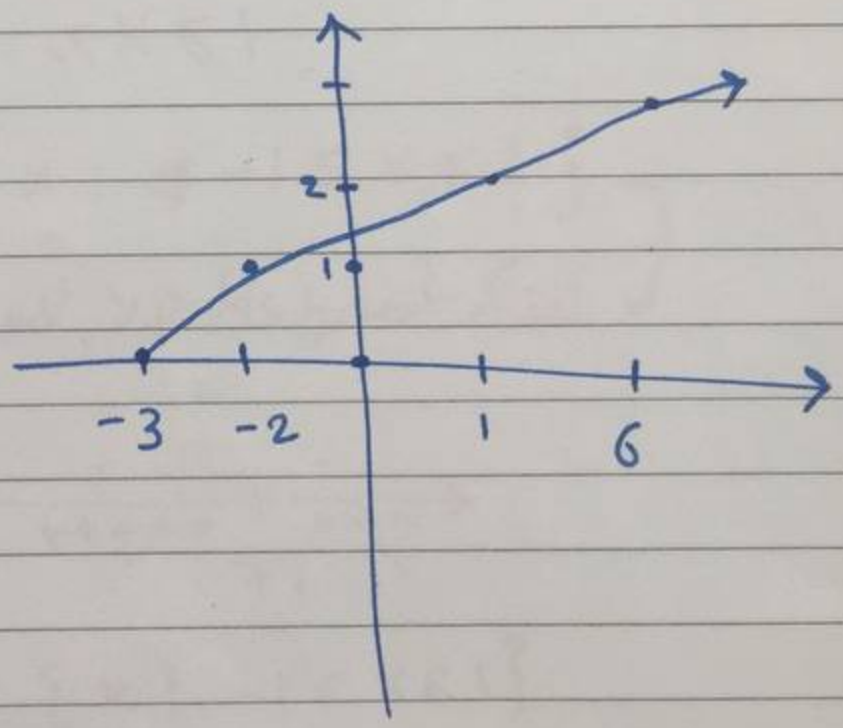
Sol:-

$$x+3 \geq 0 \Rightarrow x \geq -3$$

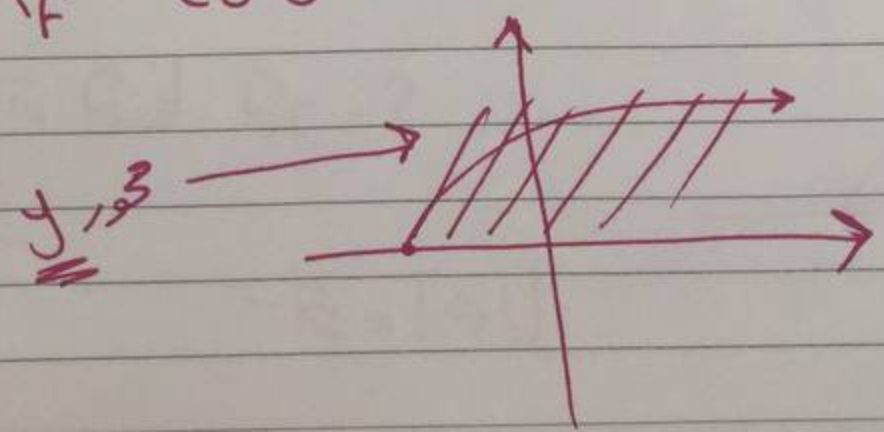
$$\therefore D_f = \{x : x \geq -3\}$$

or $D_f = [-3, +\infty)$

| x | y |
|---|---|
| -3 | 0 |
| -2 | 1 |
| 1 | 2 |
| 6 | 3 |
| ⋮ | ⋮ |




$$\therefore R_f = \{y : y \geq 0\}$$



Ex 3 :- sketch and find $D_f$ and $R_f$

for the function $f(x) = \sqrt{1-x^2}$

Sol :- → 1- To find $D_f$

$$1 - x^2 \geq 0$$

$$\rightarrow [-x^2 \geq -1] * -1$$

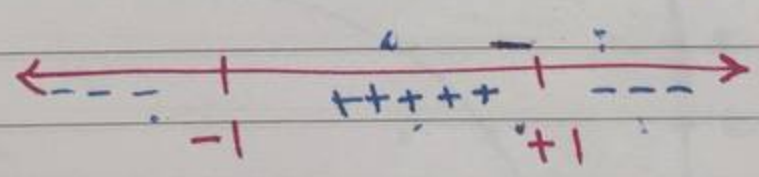
$$* \rightarrow x^2 \leq 1$$

* $x^2$ تحلل متطابقة $|x|$

$$\rightarrow -1 \leq x \leq 1$$

$$\therefore D_f = \{x : -1 \leq x \leq 1\}$$

للتأكد ارسمها على خط الاعداد



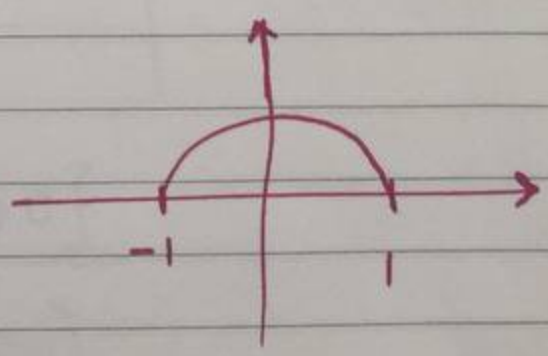

$$\therefore D_f = \{x : -1 \leq x \leq 1\}$$

or $x \in [-1, 1]$

- To find $R_f$ = ?

| x | y |
|---|---|
| -1 | 0 |
| 0 | 1 |
| 1 | 0 |

$\therefore R_f = [0, 1]$



Ex:- Find Domain, Range and sketch the function

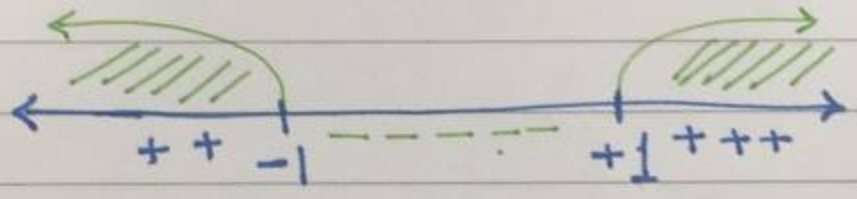
$$f(x) = \sqrt{x^2 - 1}$$

Sol:-

$$x^2 - 1 \geq 0 \rightarrow x^2 \geq 1$$

$$x \geq \pm 1$$

$$x \geq 1 \qquad x \leq -1$$

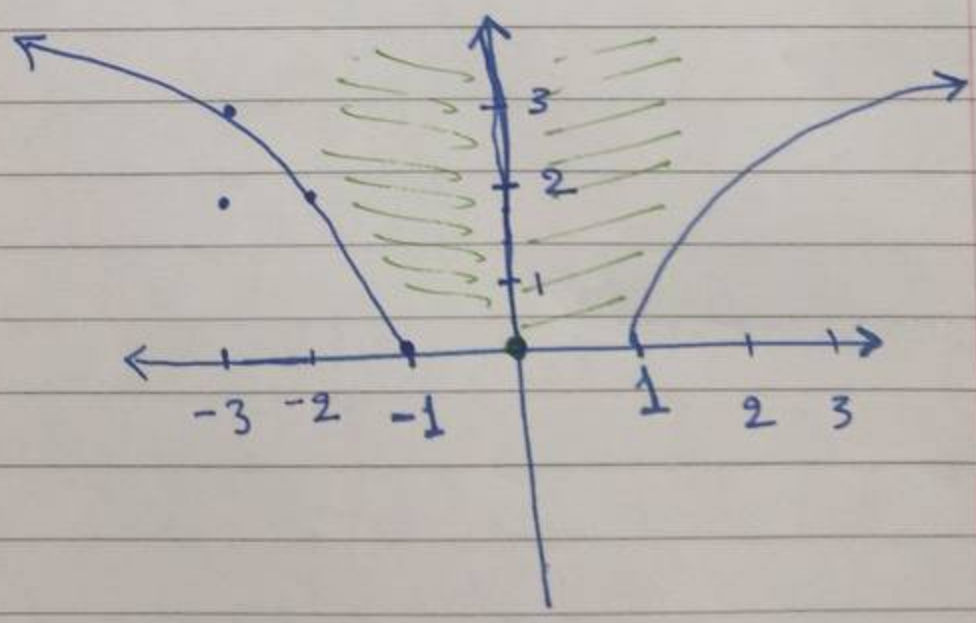



$x = -2 \rightarrow +$
$x = -3 \rightarrow +$
$x = 0 \rightarrow -$
$x = 2 \rightarrow +$
$x = 3 \rightarrow +$

$$D_f = (-\infty, -1] \cup [1, +\infty)$$

or $D_f = \{x : x \leq -1, x \geq 1\}$

| x | y |
|---|---|
| -3 | $2\sqrt{2}$ |
| -2 | $\sqrt{3}$ |
| -1 | 0 ← * |
| +1 | 0 |
| +2 | $\sqrt{3}$ |
| +3 | $2\sqrt{2}$ |




$\therefore R_f = \{y : y \geq 0\}$

$R_f = [0, +\infty)$