3. $$\lim_{x \to 1} \frac{x^2 + x - 2}{x^2 - x}$$

١. التعويض

$$\frac{1+1-2}{1-1} = \frac{0}{0}$$

٢. التبسيط

يحلل بالتجزئة

$$= \lim_{x \to 1} \frac{(x+2)(x-1)}{x(x-1)}$$

$$= \lim_{x \to 1} \frac{x+2}{x}$$

$$= \frac{3}{1} = 3$$

4. $$\lim_{x \to 2} \frac{x^3 - 8}{x - 2}$$

Solu

$$\frac{8-8}{2-2} = \frac{0}{0}$$ لايجوز

$$\therefore = \lim_{x \to 2} \frac{(x-2)(x^2+2x+4)}{(x-2)}$$

$$= \lim_{x \to 2} (x^2 + 2x + 4)$$

$$= 2^2 + 2(2) + 4 = 12$$

5. $$\lim_{x \to -1} \frac{1}{x^2+2}$$

Solu

$$\lim_{x \to -1} \frac{1}{x^2+2} = \frac{1}{1+2} = \frac{1}{3}$$

So that the limit of the function $\lim_{x \to -1} \frac{1}{x^2+2}$ when x approaches -1 is $\frac{1}{3}$.

limits

To explain the limit of goals, we consider the following mathematical definition:-

$f: R \to R$

let have the function

$f(x) = x^2 - 1 \quad ; x \in R$

we want to know what happens to the value of the function $f(x)$, when we give values for x that are very close to 2 on both sides that is, we give values of x are alittle less than 2, alittle more than 2, and so on.
This is what is meant by the expression "very close to 2" from both sides.
When we substitute values for x into the function we get the result that the value of the function is very close to the number 2.

The closer the value of x is to the number 2, that is, we can say that the limit of the function:-

$f(x) = x^2 - 1$ in the number 2 is 3

That is : $f(2) = 2^2 - 1 = 3$

The limits are divided into three sections:-

The limits are :-

H.W. Find the Range and Domain to the Fighers

1.

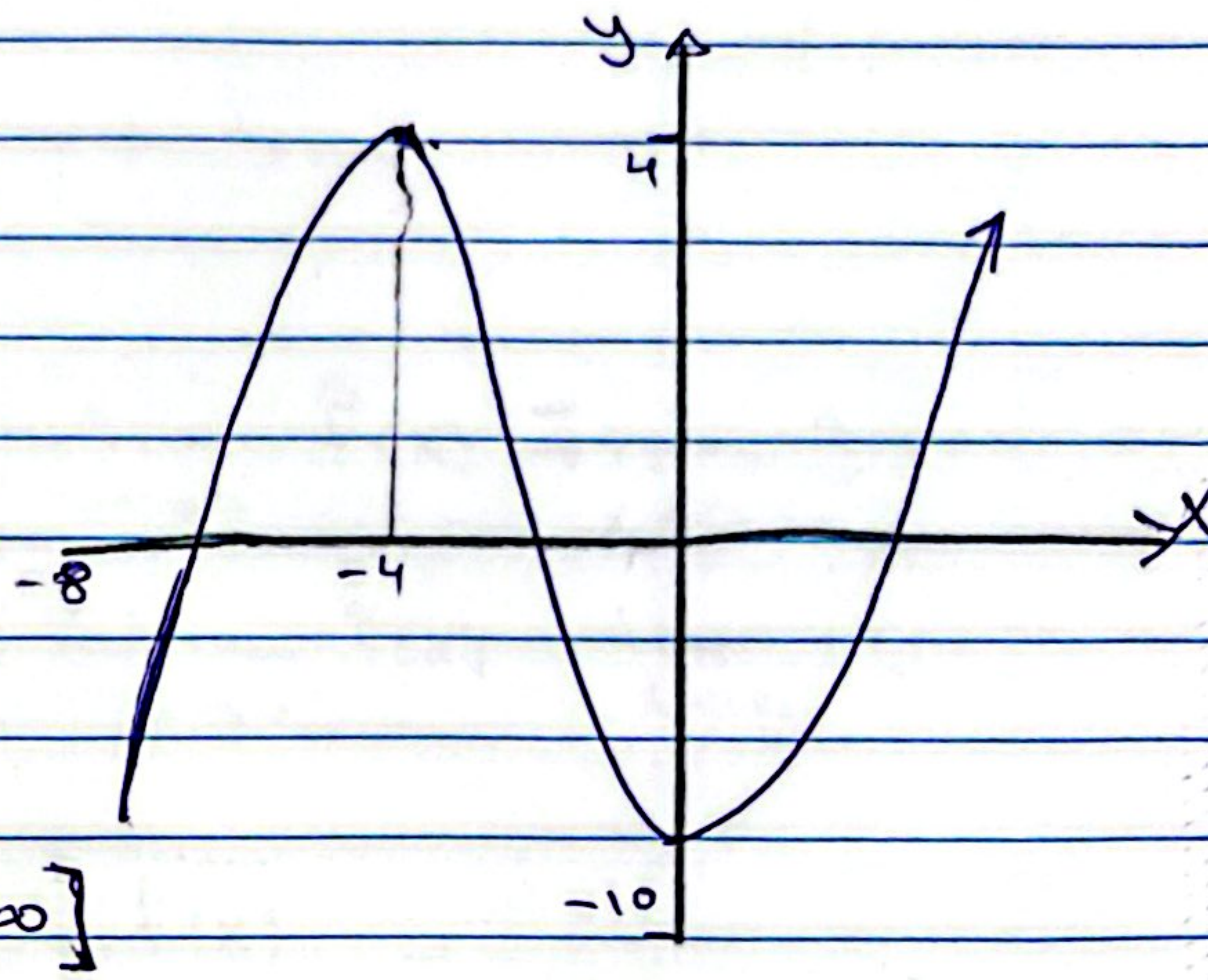
$D = [-8, -4) \cup (-4, \infty)$

or

$D = \{ X : X \in R ; X \geq -\infty \}$

$X \neq -4$

$R = \{ y : y \in R \} = [-10, \infty]$



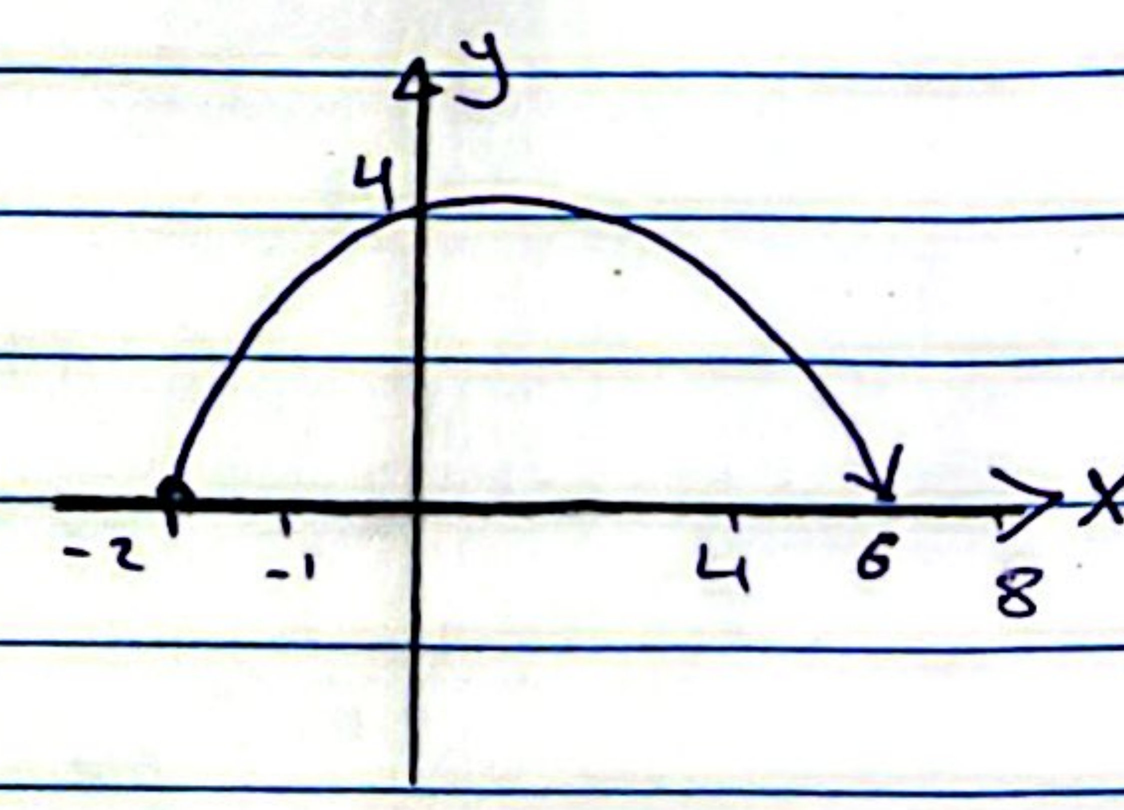
2.

$D = \{ X : X \in R \} = [-2, 6]$

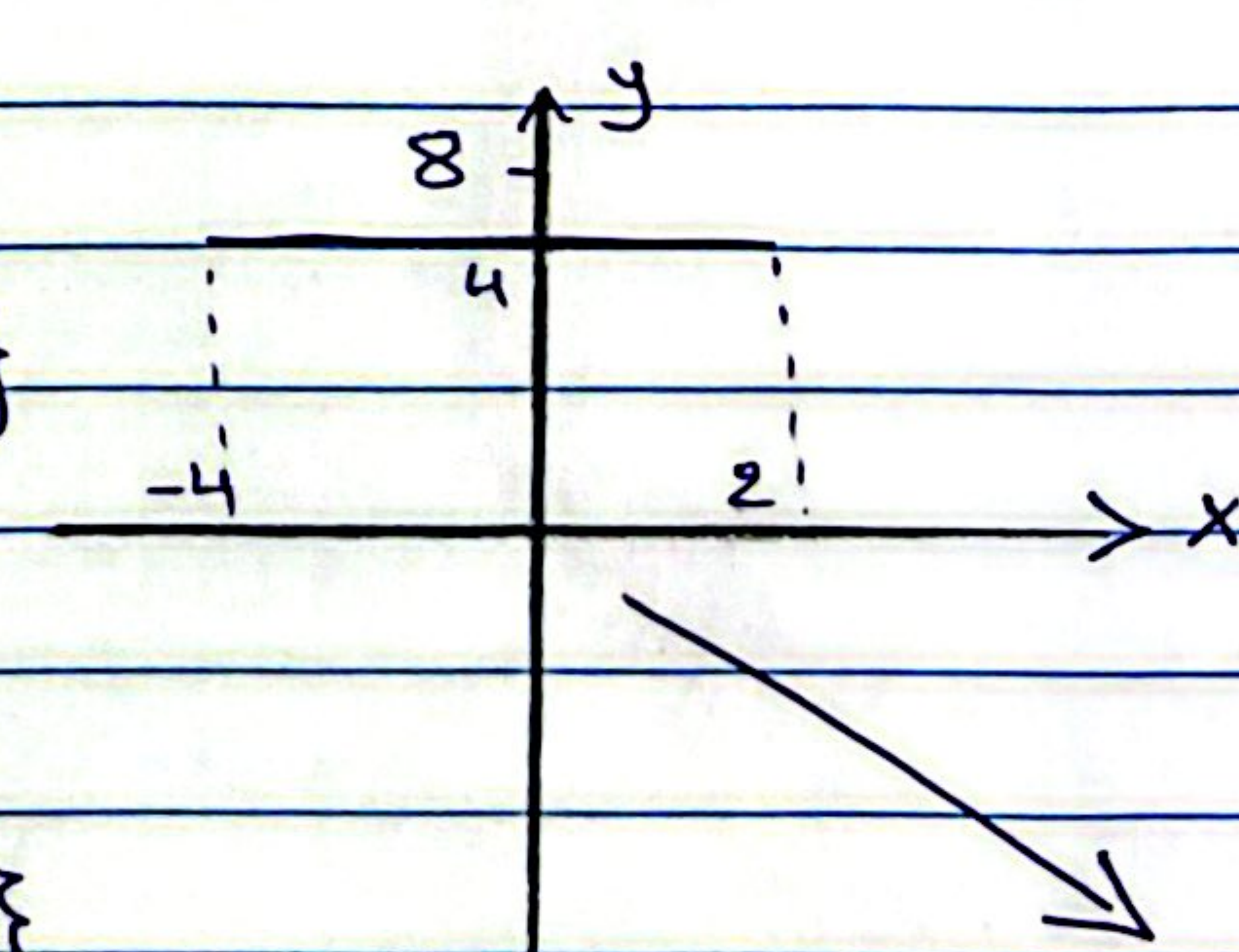
or

$D = [-2, 6)$

$R = \{ y : y \in R \} = [0, 4]$



3.



$D = \{ X : X \in R ; X > -4 ; X \neq 2 \}$

or $D = (-4, \infty) \cup (2, \infty)$

$R = \{ y : y \in R ; y < -2 ; y = 6 \}$

المدى $= (-\infty, -2) \cup (6)$