Q1) In fig. (i) if AB∥CDAB ∥ CD **, find the value of x.**

(ii) In fig. if AB∥CDAB ∥ CD **, find the value of x.**

(iii) in fig. if AB∥CDAB ∥ CD **.and OA = 3x – 19, OB = x – 4, OC = x- 3 and OD = 4, find x.**

Sol:

(i) it is given that AB∥CDAB ∥ CD

We have to find the value of x.

Diagonals of the parallelogram,

As we know, DOOA=COOB $\frac{DO}{OA} = \frac{CO}{OB}$

4x–24=2x+4x+1 $\frac{4x-2}{4} = \frac{2x+4}{x+1}$

4(2x + 4) = (4x – 2)(x +1)

8x + 16 = x(4x – 2) + 1(4x – 2)

8x + 16 = $4x^2$ – 2x + 4x – 2

-$4x^2$ + 8x + 16 + 2 – 2x = 0

-$4x^2$ + 6x + 8 = 0

$4x^2$ – 6x – 18 = 0

$4x^2$ – 12x + 6x – 18 = 0

4x(x – 3) + 6(x – 3) = 0

(4x + 6) (x – 3) = 0

X = – 6/4 or x = 3

(ii) it is given that AB∥CDAB ∥ CD

We need to find the value of x.

Now, DOOA=COOB $\frac{DO}{OA} = \frac{CO}{OB}$

6x–52x+1=5x–33x–1 $\frac{6x-5}{2x+1} = \frac{5x-3}{3x-1}$

(6x – 5)(3x – 1) = (2x + 1)(5x – 3)

$3x(6x - 5) - 1(6x - 5) = 2x(5x - 3) + 1(5x - 3)$

$18x^2 - 10x^2 - 21x + 5 + x + 3 = 0$

$8x^2 - 16x - 4x + 8 = 0$

$8x(x - 2) - 4(x - 2) = 0$

$(8x - 4)(x - 2) = 0$

$X = 4/8 = 1/2$ or $x = -2$

X= 1/2

(iii) it is given that $AB \| CD$

And OA = 3x – 19 OB = x – 4 OC = x – 3 and OD = 4

We need to find the value of x,

Now, Now, $\dfrac{AO}{OC} = \dfrac{BO}{OD}$

$\dfrac{3x-19}{x-3} = \dfrac{x-4}{4}$

$4(3x - 19) = (x - 3)(x - 4)$

$12x - 76 = x(x - 4) - 3(x - 4)$

$12x - 76 = x^2 - 4x - 3x + 12$

$-x^2 + 7x - 12 + 12x - 76 = 0$

$-x^2 + 19x - 88 = 0$

$X^2 - 19x + 88 = 0$

$X^2 - 11x - 8x + 88 = 0$

$X(x - 11) - 8(x - 11) = 0$

X = 11 or x = 8