

RD SHARMA
Solutions
Class 10 Maths
Chapter 4
Ex4.4

Q1) In fig. (i) if $AB \parallel CD$ and $AB \parallel CD$, find the value of x .

(ii) In fig. if $AB \parallel CD$ and $AB \parallel CD$, find the value of x .

(iii) in fig. if $AB \parallel CD$ and $AB \parallel CD$.and $OA = 3x - 19$, $OB = x - 4$, $OC = x - 3$ and $OD = 4$, find x .

Sol:

(i) it is given that $AB \parallel CD$ and $AB \parallel CD$

We have to find the value of x .

Diagonals of the parallelogram,

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

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

$$4(2x + 4) = (4x - 2)(x + 1)$$

$$8x + 16 = x(4x - 2) + 1(4x - 2)$$

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

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

$$-4x^2 + 6x + 18 = 0$$

$$4x^2 - 6x - 18 = 0$$

$$4x^2 - 12x + 6x - 18 = 0$$

$$4x(x - 3) + 6(x - 3) = 0$$

$$(4x + 6)(x - 3) = 0$$

$$X = -6/4 \text{ or } x = 3$$

(ii) it is given that $AB \parallel CD$ and $AB \parallel CD$

We need to find the value of x .

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

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

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

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

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

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

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

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

$$X = 4/8 = 1/2 \quad \text{or} \quad x = -2$$

$$\mathbf{X = 1/2}$$

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

$$\text{And } OA = 3x - 19 \quad OB = x - 4 \quad OC = x - 3 \quad \text{and} \quad OD = 4$$

We need to find the value of x ,

$$\text{Now, Now, } \triangle AOC \sim \triangle BOD \quad \frac{AO}{OC} = \frac{BO}{OD}$$

$$3x - 19 \quad x - 3 = x - 4 \quad \frac{3x - 19}{x - 3} = \frac{x - 4}{4}$$

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

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

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

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

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

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

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

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

$$\mathbf{X = 11 \text{ or } x = 8}$$