

NCERT Solutions for Class 12 Maths Chapter 4 Exercise 4.3 (Ex 4.3)

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NCERT Solutions class 12 Maths Determinants

1. Find the area of the triangle with vertices at the points given in each of the following:

(i) (1, 0), (6, 0), (4, 3)

(ii) (2, 7), (1, 1), (10, 8)

(iii)

Ans. (i) Area of triangle = Modulus of =

= = = = sq. units

(ii) Area of triangle = Modulus of =

= =

= =

= = sq. units

(iii) Area of triangle = Modulus of =

=

=

=

=

$$= \boxed{x} = 15 \text{ sq. units}$$

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2. Show that the points $A \boxed{x}$ $B \boxed{x}$ $C \boxed{x}$ are collinear.

Ans. Area of triangle ABC = Modulus of $\boxed{x} = \boxed{x}$

$$= \boxed{x}$$

$$= \boxed{x}$$

$$= \boxed{x}$$

$$= \boxed{x} = 0$$

Therefore, points A, B and C are collinear.

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3. Find values of \boxed{x} if area of triangle is 4 sq. units and vertices are:

(i) \boxed{x}

(ii) \boxed{x}

Ans. (i) Given: Area of triangle = Modulus of $\boxed{x} = 4$


$$\boxed{x} \text{ Modulus of } \boxed{x} = 4$$

$$\boxed{x} \boxed{x}$$


$$\boxed{x} \boxed{x}$$

$$\boxed{x} \boxed{x}$$



Taking positive sign, 




Taking negative sign, 



(ii) Given: Area of triangle = Modulus of  = 4

$$\begin{vmatrix} \times & \times \end{vmatrix} = 4$$



Taking positive sign, 



Taking negative sign, 



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4. (i) Find the equation of the line joining (1, 2) and (3, 6) using determinants.

(ii) Find the equation of the line joining (3, 1) and (9, 3) using determinants.

Ans. (i) Let $P(x_1, y_1)$ be any point on the line joining the points (1, 2) and (3, 6).

Then, Area of triangle that could be formed by these points is zero.

$$x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2) = 0$$

$$x_1(6 - 2) + 1(2 - y_1) + 3(y_1 - 2) = 0$$

$$4x_1 - y_1 + 3y_1 - 6 = 0$$

$$4x_1 + 2y_1 - 6 = 0$$

$$2x_1 + y_1 - 3 = 0$$

$2x_1 + y_1 - 3 = 0$ which is required line.

(ii) Let $P(x_2, y_2)$ be any point on the line joining the points (3, 1) and (9, 3).

Then, Area of triangle that could be formed by these points is zero.

$$x_2(y_3 - y_1) + x_1(y_1 - y_3) + x_3(y_3 - y_1) = 0$$

$$x_2(3 - 1) + 3(1 - y_2) + 9(y_2 - 1) = 0$$

$$2x_2 - y_2 + 9y_2 - 9 = 0$$

$$2x_2 + 8y_2 - 9 = 0$$

$$2x_2 + 8y_2 = 9$$

$2x_2 + 8y_2 = 9$ which is required line.

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5. If area of triangle is 35 sq. units with vertices (x_1, y_1) and (x_2, y_2) Then

is:

(A) 12

(B)

(C)

(D)

Ans. Given: Area of triangle = Modulus of = 35

Modulus of = 35

Taking positive sign,

Taking negative sign,

Therefore, option (D) is correct.

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