

**Question 1:** Calculate the cross products of vectors  $a = \langle 3, 4, 7 \rangle$  and  $b = \langle 4, 9, 2 \rangle$ .

**Solution:**

The given vectors are,  $a = (3, 4, 7)$  and  $b = (4, 9, 2)$

The cross product is given by

$a$

$\times$

$b =$

$$\begin{vmatrix} i & j & k \\ a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{vmatrix}$$

$a$

$\times$

$b =$

$$\begin{vmatrix} i & j & k \\ 3 & 4 & 7 \\ 4 & 9 & 2 \end{vmatrix}$$

$a$

$\times$

$b =$

$$i(4 \times 2 - 9 \times 7) - j(3 \times 2 - 4 \times 7) + k(3 \times 9 - 4 \times 4)$$

$a$

$\times$

$b =$

$$i(8 - 63) - j(6 - 28) + k(27 - 16)$$

$a$

$\times$

$b =$

$$-55i + 22j + 11k$$