

Step-1

Given vectors $a=(3,4), b=(4,3)$.

We have to find the cosine of the angle between a and b .

Step-2

Let θ be the angle between a and b .

$$\cos \theta = \frac{a^T b}{\|a\| \|b\|} \dots (1)$$

$$\begin{aligned} a^T b &= (3,4) \begin{pmatrix} 4 \\ 3 \end{pmatrix} \\ &= 12 + 12 \\ &= 24 \end{aligned}$$

Step-3

$$\begin{aligned} \|a\| &= \sqrt{3^2 + 4^2} \\ &= 5 \end{aligned}$$

$$\begin{aligned} \|b\| &= \sqrt{4^2 + 3^2} \\ &= 5 \end{aligned}$$

$$\text{Hence by (1), } \cos \theta = \frac{24}{5(5)}$$

$$= \boxed{\frac{24}{25}}$$