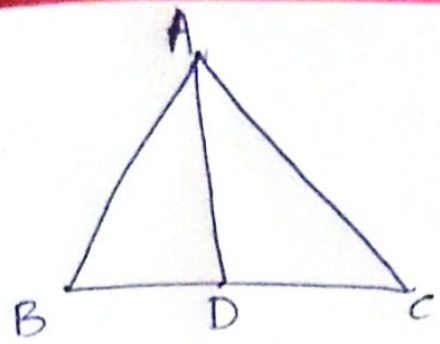


$$\frac{BD}{DC} = \frac{AB}{BC}$$

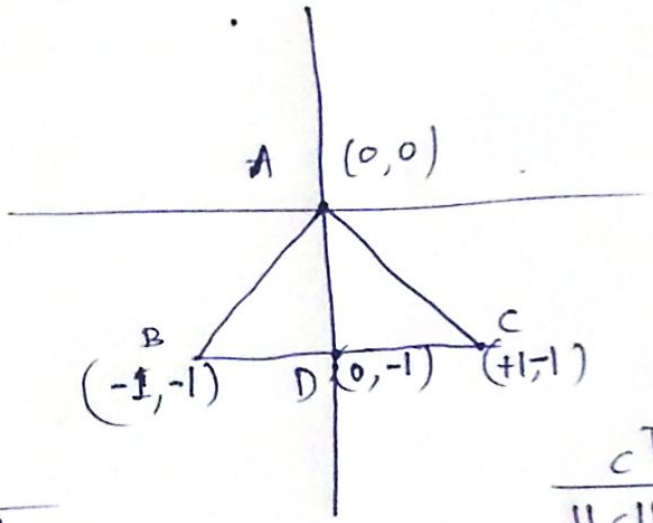
$$\cos BAD = \frac{(A-B)^T(A-D)}{\|A-B\|\,\|A-D\|}$$

If $A = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \Rightarrow \frac{(B)^T(D)}{\|B\|\,\|D\|}$

$$\cos CAD = \frac{(A-C)^T(A-D)}{\|A-C\|\,\|A-D\|}$$

$$\Rightarrow \frac{(C)^T(D)}{\|C\|\,\|D\|}$$

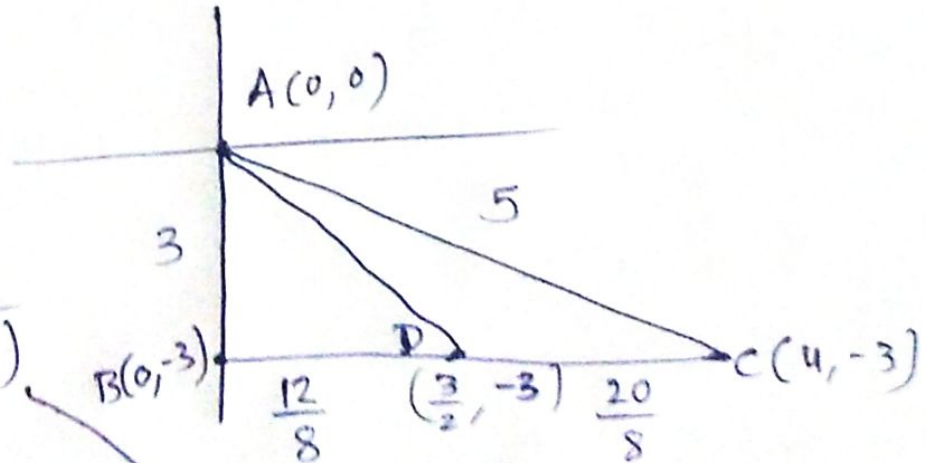
eg1



$$\frac{B^T(D)}{\|B\|\,\|D\|} = \frac{1}{\sqrt{2}\cdot\sqrt{1}}$$

$$\frac{C^T(D)}{\|C\|\,\|D\|} = \frac{1}{\sqrt{2}\sqrt{1}}$$

eg2:



$$\frac{B^T(D)}{\|B\|\,\|D\|} = \frac{9}{(3)(\|D\|)}$$

$$\frac{C^T(D)}{\|C\|\,\|D\|} = \frac{15}{(5)\,\|D\|} \longrightarrow \text{equal.}$$