

## 4.5.8

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# Question

The value of  $\lambda$  for which the vectors  $3i - 6j + k$  and  $2i - 4j + \lambda k$  are parallel is: a)  $2/3$    b)  $3/2$    c)  $5/2$    d)  $2/5$

Two vectors **A** and **B** are parallel if

$$\mathbf{B} = t\mathbf{A} \quad (1)$$

for some scalar  $t$ .

# Solution

Given,

$$\begin{pmatrix} 2 \\ -4 \\ \lambda \end{pmatrix} \text{ is parallel to } \begin{pmatrix} 3 \\ -6 \\ 1 \end{pmatrix} \quad (2)$$

$$\implies \begin{pmatrix} 2 \\ -4 \\ \lambda \end{pmatrix} = t \begin{pmatrix} 3 \\ -6 \\ 1 \end{pmatrix} \quad (3)$$

$$\implies 2 = 3t, \quad -4 = -6t, \quad \lambda = t \quad (4)$$

$$t = \frac{2}{3} \quad \therefore \quad \lambda = \frac{2}{3} \quad (5)$$

codes permalink

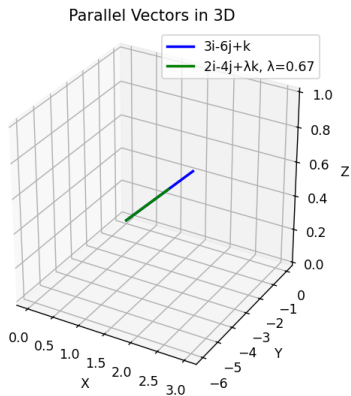


Figure: Vectors  $3i - 6j + k$  and  $2i - 4j + \lambda k$  (parallel in 3D)