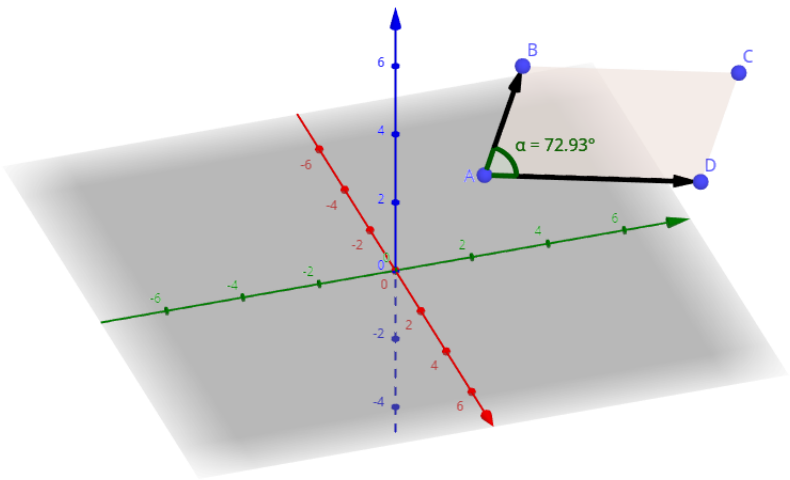
- $A = (1, 2, 3)$
- $B = (1, 3, 6)$
- $C = (3, 8, 6)$
- $D = (3, 7, 3)$
- $\overrightarrow{u} = B - A = (0, 1, 3)$
- $\overrightarrow{v} = C - A = (2, 6, 3)$



$Area = \|\overrightarrow{u} \times \overrightarrow{v}\| = \|(0, 1, 3) \times (2, 6, 3)\|$

$$\begin{vmatrix} i & j & k \\ 0 & 1 & 3 \\ 2 & 6 & 3 \end{vmatrix}$$

$= (1 \cdot 3) - (6 \cdot 3)) \cdot \widehat{i} - (0 \cdot 3) - (2 \cdot 3)) \cdot \widehat{j} + (0 \cdot 6) - (2 \cdot 1)) \cdot \widehat{k} = (-15, 6, -2)$

$\|(-15, 6, -2)\| = \sqrt{(-15)^2 + 6^2 + (-2)^2} = \sqrt{225 + 36 + 4} = \sqrt{265}$