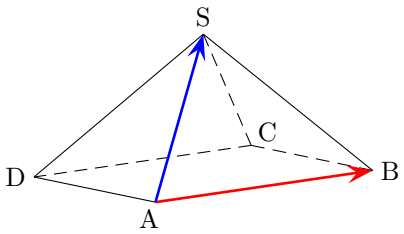
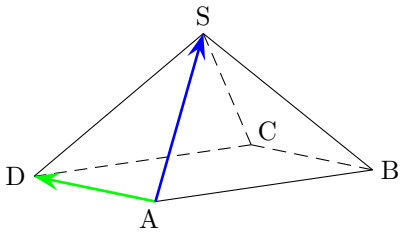
6.15

1)



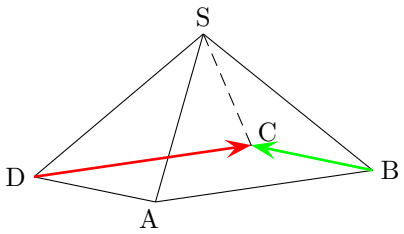
$$\begin{aligned}\overrightarrow{BS} &= -\overrightarrow{AB} + \overrightarrow{AS}\\ &= -\vec{e_1} + \vec{e_3}\end{aligned}$$

2)



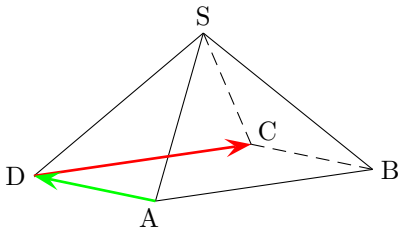
$$\begin{aligned}\overrightarrow{DS} &= -\overrightarrow{AD} + \overrightarrow{AS}\\ &= -\vec{e_2} + \vec{e_3}\end{aligned}$$

3)



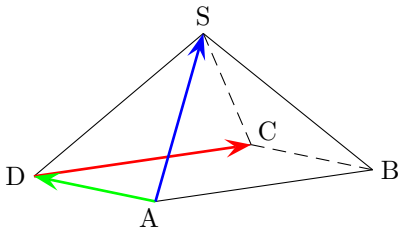
$$\begin{aligned}\overrightarrow{DB} &= \overrightarrow{DC} - \overrightarrow{BC}\\ &= \overrightarrow{AB} - \overrightarrow{AD}\\ &= \vec{e_1} - \vec{e_2}\end{aligned}$$

4)



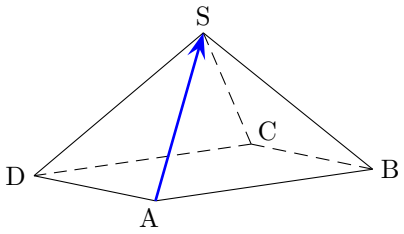
$$\begin{aligned}\overrightarrow{CA} &= -\overrightarrow{DC} - \overrightarrow{AD}\\ &= -\overrightarrow{AB} - \overrightarrow{AD}\\ &= -\vec{e_1} - \vec{e_2}\end{aligned}$$

5)



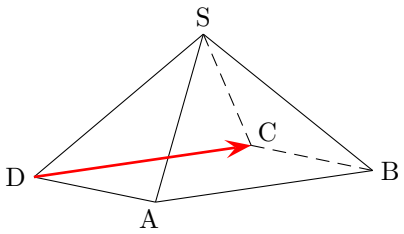
$$\begin{aligned}\overrightarrow{CS} &= -\overrightarrow{DC} - \overrightarrow{AD} + \overrightarrow{AS}\\ &= -\overrightarrow{AB} - \overrightarrow{AD} + \overrightarrow{AS}\\ &= -\vec{e_1} - \vec{e_2} + \vec{e_3}\end{aligned}$$

6)



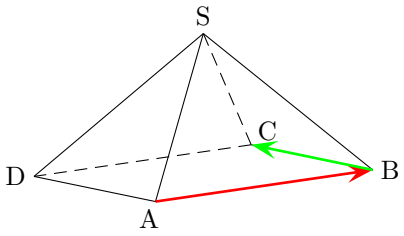
$$\overrightarrow{AS} = \vec{e_3}$$

7)



$$\begin{aligned}\overrightarrow{DC} &= \overrightarrow{AB} \\ &= \vec{e_1}\end{aligned}$$

8)



$$\begin{aligned}\overrightarrow{AC} &= \overrightarrow{AB} + \overrightarrow{BC} \\ &= \overrightarrow{AB} + \overrightarrow{AD} \\ &= \vec{e_1} + \vec{e_2}\end{aligned}$$