

6.6

$$\begin{aligned} 1) \vec{a} &= \overrightarrow{BD} + \overrightarrow{AB} + \overrightarrow{DC} \\ &= \overrightarrow{AB} + \overrightarrow{BD} + \overrightarrow{DC} \\ &= \overrightarrow{AC} \end{aligned}$$

$$\begin{aligned} 2) \vec{b} &= \overrightarrow{BC} + \overrightarrow{DE} + \overrightarrow{DC} + \overrightarrow{AD} + \overrightarrow{EB} \\ &= \overrightarrow{AD} + \overrightarrow{DE} + \overrightarrow{EB} + \overrightarrow{BC} + \overrightarrow{DC} \\ &= \overrightarrow{AC} + \overrightarrow{DC} \end{aligned}$$

$$\begin{aligned} 3) \vec{c} &= \overrightarrow{AC} - \overrightarrow{BD} - \overrightarrow{AB} \\ &= \overrightarrow{AC} + \overrightarrow{DB} + \overrightarrow{BA} \\ &= \overrightarrow{DB} + \overrightarrow{BA} + \overrightarrow{AC} \\ &= \overrightarrow{DC} \end{aligned}$$

$$\begin{aligned} 4) \vec{d} &= \overrightarrow{DA} - \overrightarrow{DB} + \overrightarrow{CD} - \overrightarrow{BC} \\ &= \overrightarrow{DA} + \overrightarrow{BD} + \overrightarrow{CD} + \overrightarrow{CB} \\ &= \overrightarrow{CD} + \overrightarrow{CB} + \overrightarrow{BD} + \overrightarrow{DA} \\ &= \overrightarrow{CD} + \overrightarrow{CA} \end{aligned}$$

$$\begin{aligned} 5) \vec{e} &= \overrightarrow{EC} - \overrightarrow{ED} + \overrightarrow{CB} - \overrightarrow{DB} \\ &= \overrightarrow{EC} + \overrightarrow{DE} + \overrightarrow{CB} + \overrightarrow{BD} \\ &= \overrightarrow{BD} + \overrightarrow{DE} + \overrightarrow{EC} + \overrightarrow{CB} \\ &= \overrightarrow{BB} \\ &= \vec{0} \end{aligned}$$

$$\begin{aligned} 6) \vec{f} &= \overrightarrow{AC} + \overrightarrow{CE} - \overrightarrow{AD} \\ &= \overrightarrow{AC} + \overrightarrow{CE} + \overrightarrow{DA} \\ &= \overrightarrow{DA} + \overrightarrow{AC} + \overrightarrow{CE} \\ &= \overrightarrow{DE} \end{aligned}$$