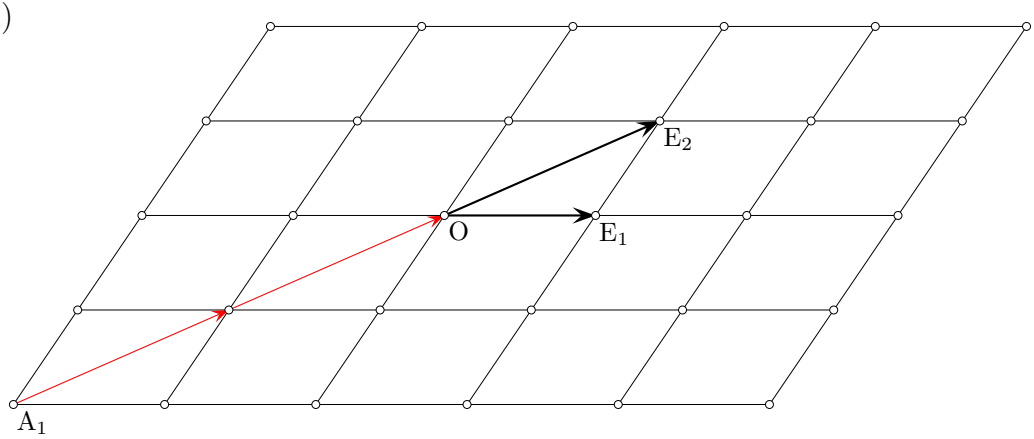
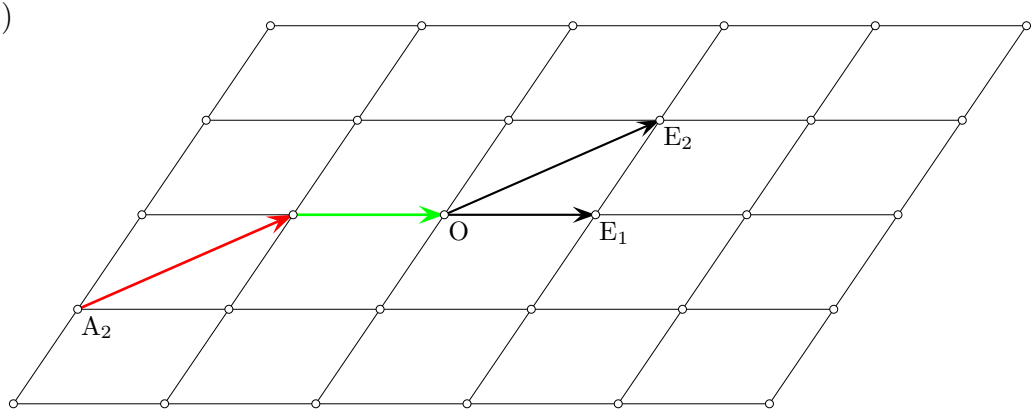
8.1

1)



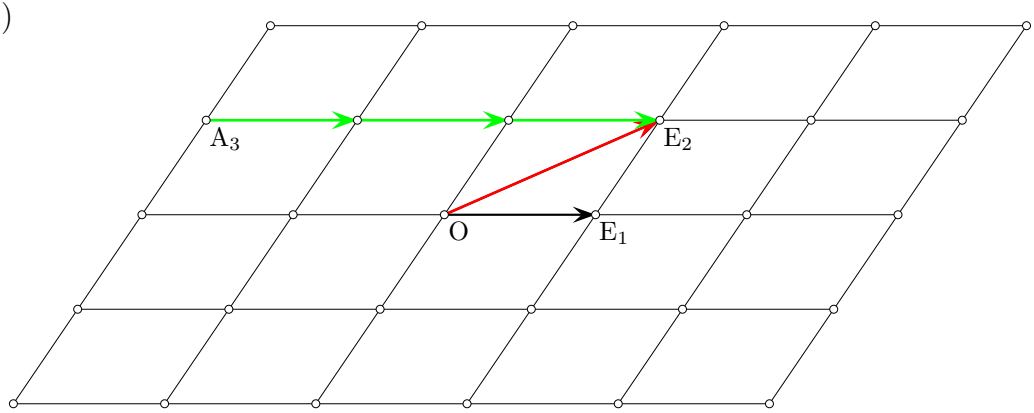
$\overrightarrow{OA_1} = -2\,\overrightarrow{OE_2} = \begin{pmatrix} 0 \\ -2 \end{pmatrix} \iff A_1(0\,;-2)$

2)



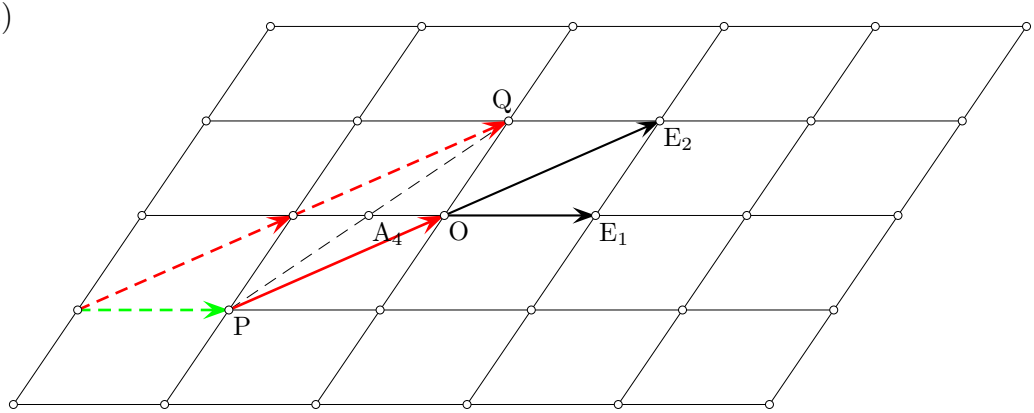
$\overrightarrow{OA_2} = -\overrightarrow{OE1} - \overrightarrow{OE_2} = \begin{pmatrix} -1 \\ -1 \end{pmatrix} \iff A_2(-1\,;-1)$

3)



$\overrightarrow{OA_3} = \overrightarrow{OE_2} - 3\,\overrightarrow{OE1} = \begin{pmatrix} -3 \\ 1 \end{pmatrix} \iff A_3(-3\,;1)$

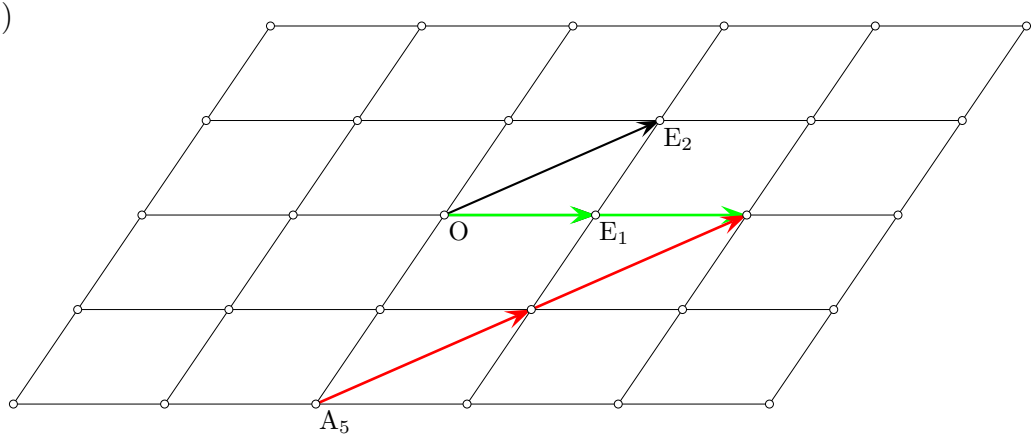
4)



$$\overrightarrow{OA_4} = \overrightarrow{OP} + \overrightarrow{PA_4} = \overrightarrow{OP} + \tfrac{1}{2}\overrightarrow{PQ} = \begin{pmatrix} 0 \\ -1 \end{pmatrix} + \tfrac{1}{2}\begin{pmatrix} -1 \\ 2 \end{pmatrix}$$

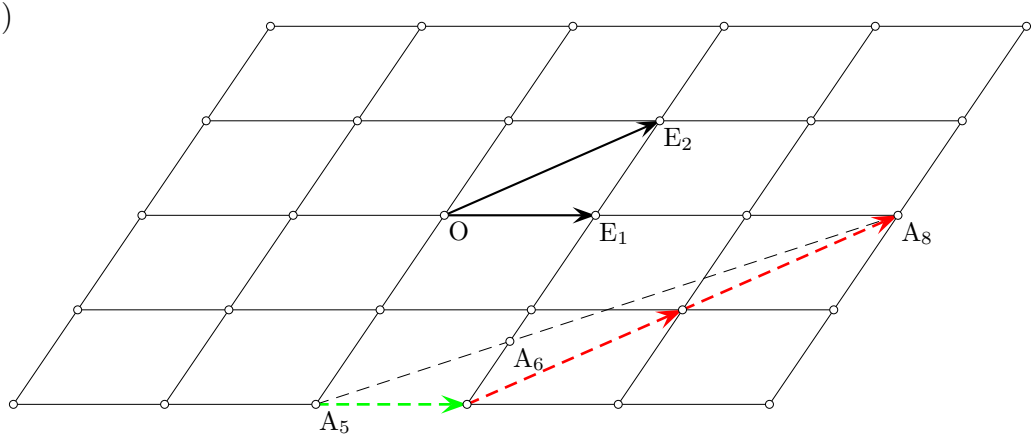
$$= \begin{pmatrix} 0 + \frac{1}{2}\cdot(-1) \\ -1 + \frac{1}{2}\cdot 2 \end{pmatrix} = \begin{pmatrix} -\frac{1}{2} \\ 0 \end{pmatrix} \iff A_4(-\tfrac{1}{2}\,;0)$$

5)



$$\overrightarrow{OA_5} = 2\,\overrightarrow{OE1} - 2\,\overrightarrow{OE_2} = \begin{pmatrix} 2 \\ -2 \end{pmatrix} \iff A_5(2\,;-2)$$

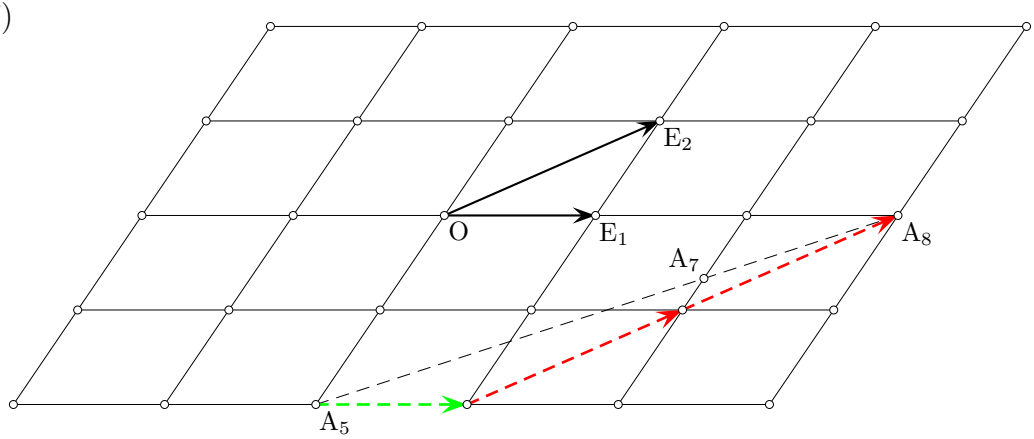
6)



$$\overrightarrow{OA_6} = \overrightarrow{OA_5} + \overrightarrow{A_5A_6} = \overrightarrow{OA_5} + \tfrac{1}{3}\overrightarrow{A_5A_8} = \begin{pmatrix} 2 \\ -2 \end{pmatrix} + \tfrac{1}{3}\begin{pmatrix} 1 \\ 2 \end{pmatrix}$$

$$= \begin{pmatrix} 2 + \frac{1}{3}\cdot 1 \\ -2 + \frac{1}{3}\cdot 2 \end{pmatrix} = \begin{pmatrix} \frac{7}{3} \\ -\frac{4}{3} \end{pmatrix} \iff A_6(\tfrac{7}{3}\,;-\tfrac{4}{3})$$

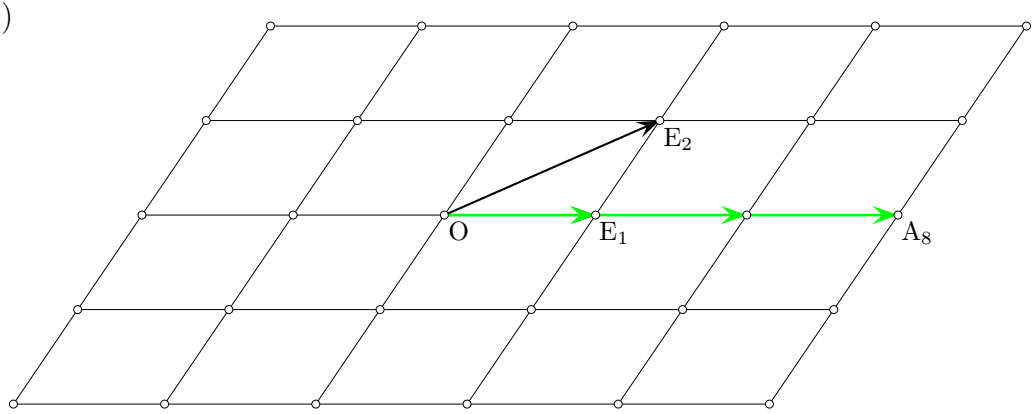
7)



$$\overrightarrow{OA_7} = \overrightarrow{OA_5} + \overrightarrow{A_5A_7} = \overrightarrow{OA_5} + \tfrac{2}{3}\overrightarrow{A_5A_8} = \begin{pmatrix} 2 \\ -2 \end{pmatrix} + \tfrac{2}{3}\begin{pmatrix} 1 \\ 2 \end{pmatrix}$$

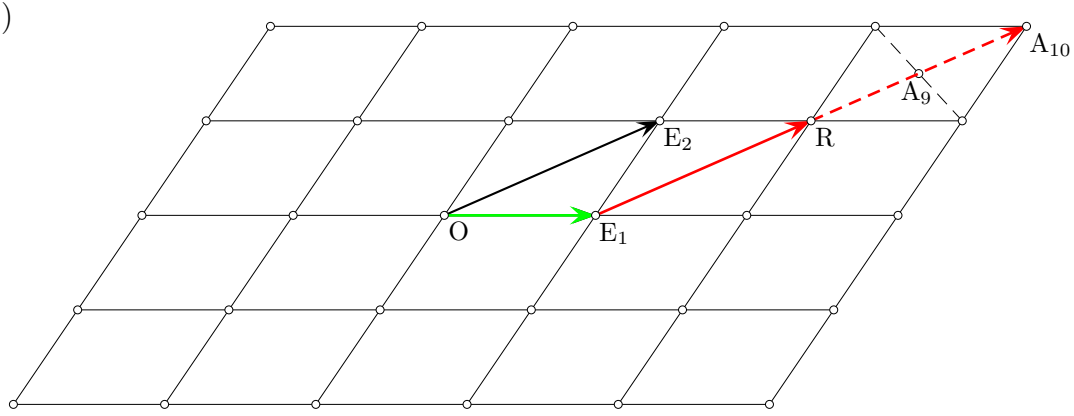
$$= \begin{pmatrix} 2 + \frac{2}{3} \cdot 1 \\ -2 + \frac{2}{3} \cdot 2 \end{pmatrix} = \begin{pmatrix} \frac{8}{3} \\ -\frac{2}{3} \end{pmatrix} \iff A_7(\tfrac{8}{3}\,;-\tfrac{2}{3})$$

8)



$$\overrightarrow{OA_8} = 3\,\overrightarrow{OE1} = \begin{pmatrix} 3 \\ 0 \end{pmatrix} \iff A_8(3\,;0)$$

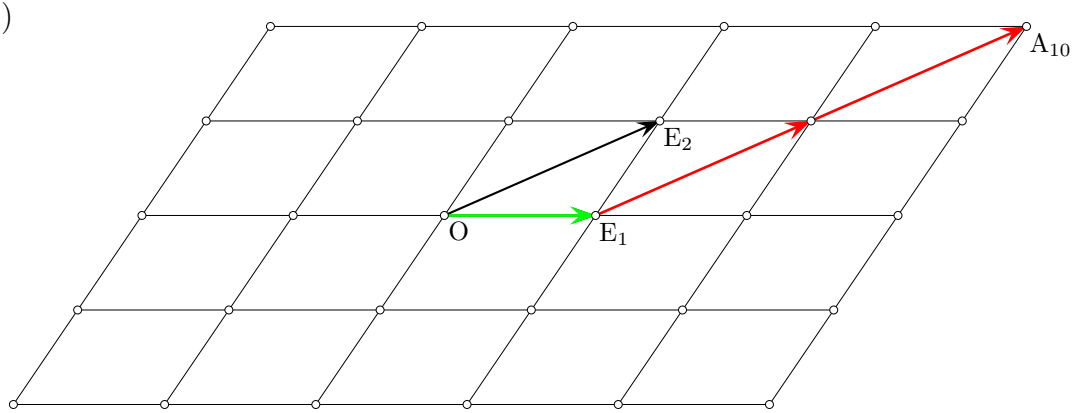
9)



$$\overrightarrow{OA_9} = \overrightarrow{OR} + \overrightarrow{RA_9} = \overrightarrow{OR} + \tfrac{1}{2}\overrightarrow{RA_{10}} = \begin{pmatrix} 1 \\ 1 \end{pmatrix} + \tfrac{1}{2}\begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$= \begin{pmatrix} 1 + \frac{1}{2} \cdot 0 \\ 1 + \frac{1}{2} \cdot 1 \end{pmatrix} = \begin{pmatrix} 1 \\ \frac{3}{2} \end{pmatrix} \iff A_9(1\,;\tfrac{3}{2})$$

10)



$$\overrightarrow{OA_{10}} = \overrightarrow{OE1} + 2\,\overrightarrow{OE_2} = \begin{pmatrix} 1 \\ 2 \end{pmatrix} \iff A_{10}(1\,;2)$$