(102) ④

	x	y	
	x_0	y_0	
y_0x_1	x_1	y_1	x_0y_1
y_1x_2	x_2	y_2	x_1y_2
y_2x_0	x_0	y_0	x_2y_0

$$\frac{\boxed{\begin{array}{l} x_0y_1 - y_0x_1 \\ + \; x_1y_2 - y_1x_2 \\ + \; x y_0 - y_2x_0 \end{array}}}{2}$$

$\overrightarrow{CA} = \langle 1,2 \rangle$

$\overrightarrow{CB} = \langle 4,3 \rangle$

	x	y	
	0	0	
0	4	3	0
3	1	2	8
0	0	0	0
3			8

$$\frac{8-3}{2} = \frac{5}{2}$$

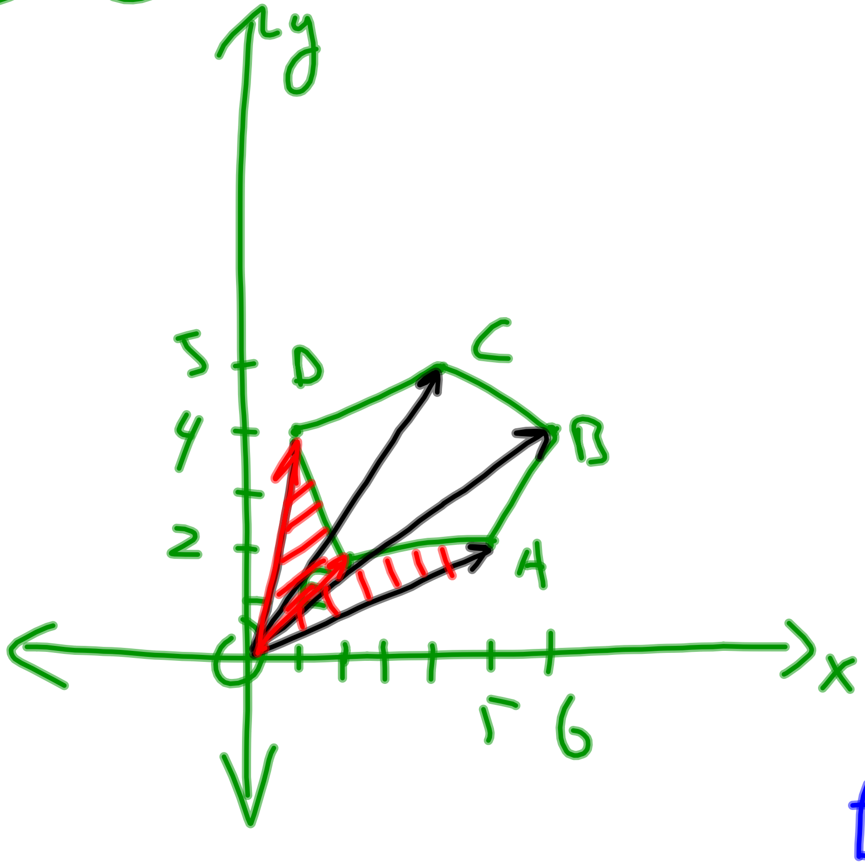
$$\vec{CA} \times \vec{CB} = \begin{vmatrix} \vec{i} & \vec{j} & \vec{k} \\ 1 & 2 & 0 \\ 4 & 3 & 0 \end{vmatrix} = \begin{vmatrix} 1 & 2 \\ 4 & 3 \end{vmatrix} \hat{k}$$

$$= (3-8)\hat{k}$$

$$= \langle 0, 0, -5 \rangle$$

$$A_{\Delta} = \frac{|\vec{CA} \times \vec{CB}|}{2} = \frac{5}{2}$$

(102) (5)



	x	y	
	5	2	
2			1
12	6	4	20
16	4	5	30
5	1	4	16
8	2	2	2
+10	5	2	4
51			72

$$\frac{72-51}{2}$$

$$\frac{21}{2}$$

10.5

$$\vec{OA} \times \vec{OB} = \begin{vmatrix} 5 & 2 \\ 6 & 4 \end{vmatrix} \hat{n} = 8\hat{n}$$

$$\vec{OB} \times \vec{OC} = \begin{vmatrix} 6 & 4 \\ 4 & 5 \end{vmatrix} \hat{n} = 14\hat{n}$$

$$\vec{OC} \times \vec{OD} = \begin{vmatrix} 4 & 5 \\ 1 & 4 \end{vmatrix} \hat{n} = 11\hat{n}$$

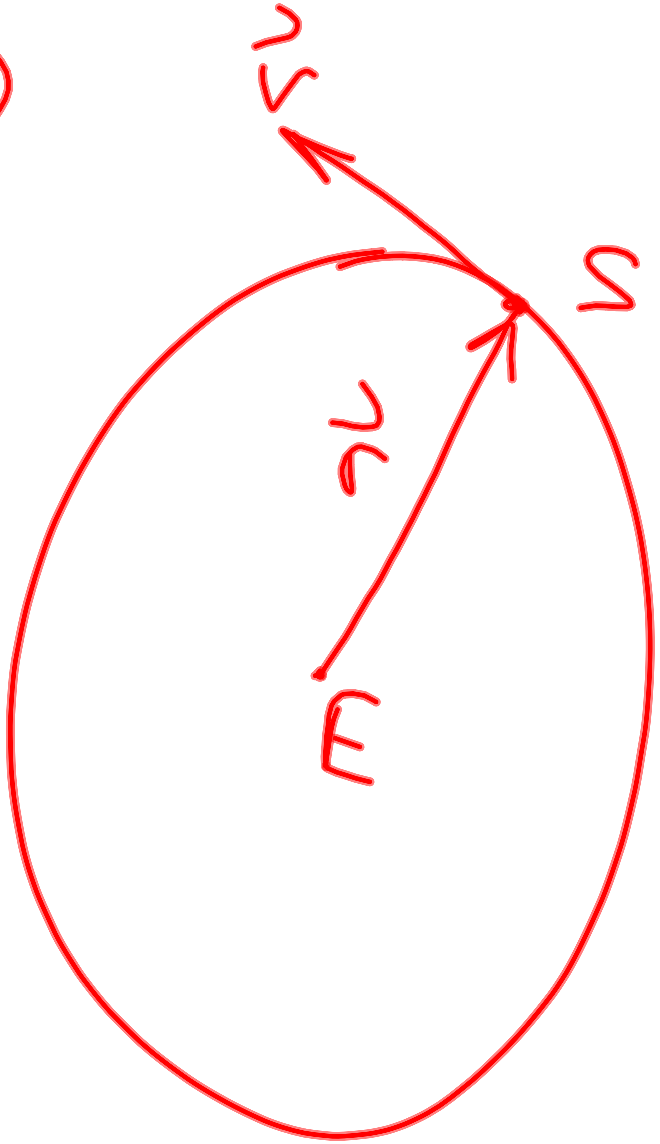
$$\vec{OD} \times \vec{OE} = \begin{vmatrix} 1 & 4 \\ 2 & 2 \end{vmatrix} \hat{n} = -6\hat{n}$$

$$\vec{OE} \times \vec{OA} = \begin{vmatrix} 2 & 2 \\ 5 & 2 \end{vmatrix} \hat{n} = \underline{-6\hat{n}}$$

$$21\hat{n}$$

$$\frac{21}{2} = 10.5$$

(102) (6)



⑩ ⑥(a)

$$\vec{T} = \frac{d\vec{L}}{dt} = \frac{d}{dt}(\vec{r}\times\vec{p})$$

$$= \vec{r}\times\frac{d\vec{p}}{dt} + \vec{p}\times\frac{d\vec{r}}{dt}$$

$$= \vec{r}\times\vec{F}$$