

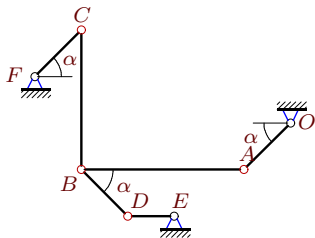
Механизм с двумя степенями свободы

В указанном положении механизма заданы угловые скорости двух его звеньев (с^{-1}). Длины звеньев даны в сантиметрах, $\alpha = 45^\circ$. Стержни, направление которых не указано, считать горизонтальными или вертикальными. Найти угловые скорости всех звеньев механизма.

Кирсанов М.Н. **Решебник. Теоретическая механика**/Под ред. А. И. Кириллова.– М.: ФИЗМАТЛИТ, 2008. — 384 с. (с.158.)

Задача К-25.1.

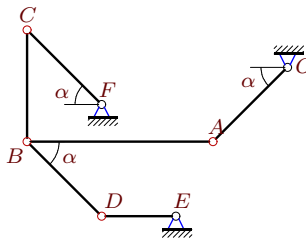
23



$$\omega_{OA_z} = \omega_{DE_z} = 21, AB = 7, BC = 6, DE = 2, OA = CF = BD = 2\sqrt{2}.$$

Задача К-25.2.

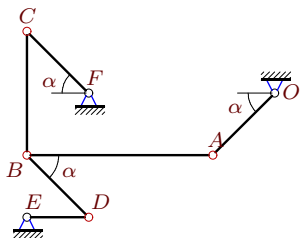
23



$$\omega_{CF_z} = 15, \omega_{DE_z} = -15, AB = 10, BC = 6, DE = 4, OA = CF = BD = 4\sqrt{2}.$$

Задача К-25.3.

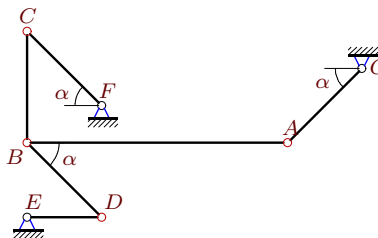
23



$$\omega_{OA_z} = -6, \omega_{DE_z} = -18, AB = 9, BC = 6, DE = 3, OA = CF = BD = 3\sqrt{2}.$$

Задача К-25.4.

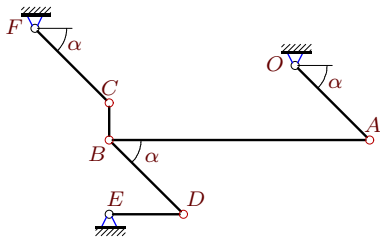
23



$$\omega_{OA_z} = 7, \omega_{CF_z} = -7, AB = 7, BC = 3, DE = 2, OA = CF = BD = 2\sqrt{2}.$$

Задача К-25.5.

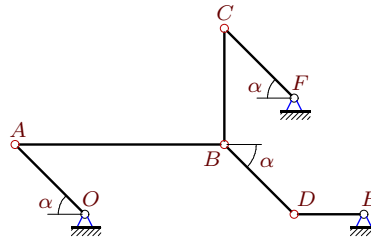
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$$\omega_{CF_z} = \omega_{DE_z} = -7, AB = 7, BC = 1, DE = 2, OA = CF = BD = 2\sqrt{2}.$$

Задача К-25.6.

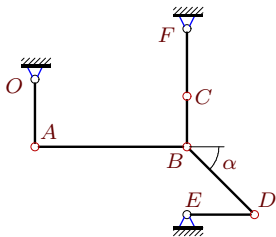
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$$\omega_{OA_z} = \omega_{DE_z} = 15, AB = 9, BC = 5, DE = 3, OA = CF = BD = 3\sqrt{2}.$$

Задача К-25.7.

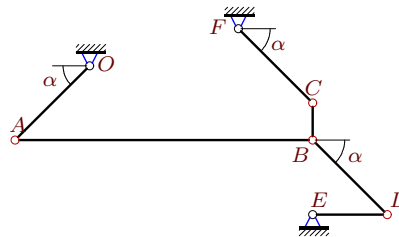
23



$$\omega_{OA_z} = -3, \omega_{CF_z} = -9, AB = 9, BC = 3, DE = 4, OA = 4, CF = 4, BD = 4\sqrt{2}.$$

Задача К-25.8.

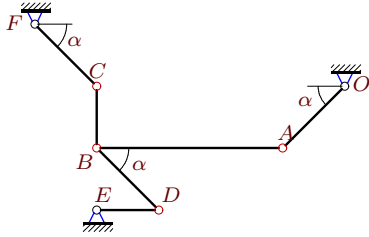
23



$$\omega_{OA_z} = -1, \omega_{CF_z} = -3, AB = 8, BC = 1, DE = 2, OA = CF = BD = 2\sqrt{2}.$$

Задача К-25.9.

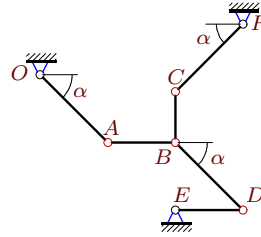
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$\omega_{OA_z} = \omega_{CF_z} = 3$, $AB = 9$, $BC = 3$,
 $DE = 3$, $OA = CF = BD = 3\sqrt{2}$.

Задача К-25.10.

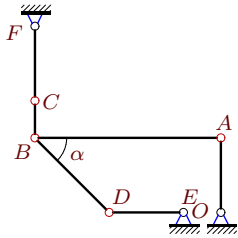
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$\omega_{CF_z} = -2$, $\omega_{DE_z} = 1$, $AB = 4$, $BC = 3$,
 $DE = 4$, $OA = CF = BD = 4\sqrt{2}$.

Задача К-25.11.

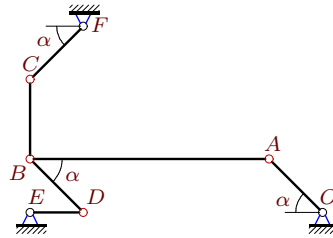
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$\omega_{OA_z} = -1$, $\omega_{CF_z} = 3$, $AB = 10$, $BC = 2$,
 $DE = 4$, $OA = 4$, $CF = 4$, $BD = 4\sqrt{2}$.

Задача К-25.12.

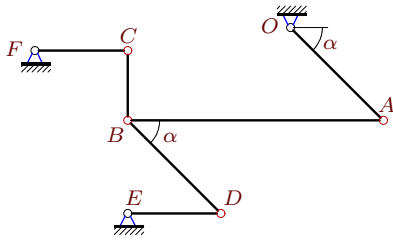
23



$\omega_{OA_z} = -9$, $\omega_{DE_z} = 18$, $AB = 9$, $BC = 3$,
 $DE = 2$, $OA = CF = BD = 2\sqrt{2}$.

Задача К-25.13.

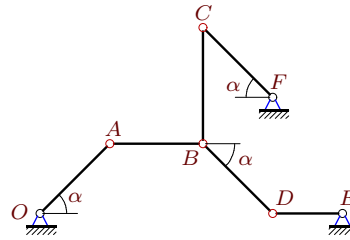
23



$\omega_{OA_z} = \omega_{CF_z} = 3$, $AB = 11$, $BC = 3$,
 $DE = 4$, $CF = 4$, $OA = BD = 4\sqrt{2}$.

Задача К-25.14.

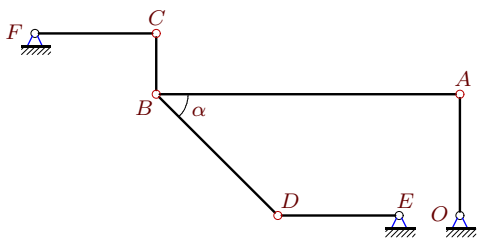
23



$\omega_{OA_z} = 5$, $\omega_{DE_z} = -10$, $AB = 4$, $BC = 5$,
 $DE = 3$, $OA = CF = BD = 3\sqrt{2}$.

Задача К-25.15.

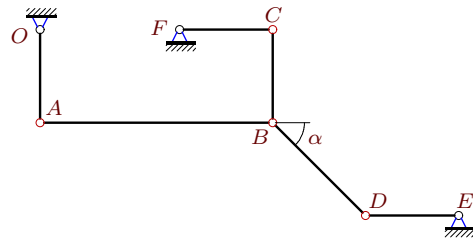
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$\omega_{OA_z} = 5$, $\omega_{DE_z} = -10$, $AB = 10$, $BC = 2$,
 $DE = 4$, $OA = 4$, $CF = 4$, $BD = 4\sqrt{2}$.

Задача К-25.16.

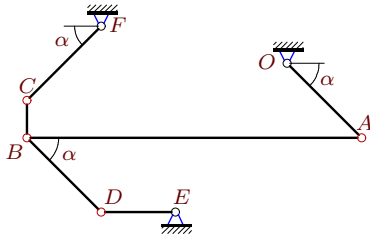
23



$\omega_{OA_z} = -5$, $\omega_{DE_z} = 10$, $AB = 10$, $BC = 4$,
 $DE = 4$, $OA = 4$, $CF = 4$, $BD = 4\sqrt{2}$.

Задача К-25.17.

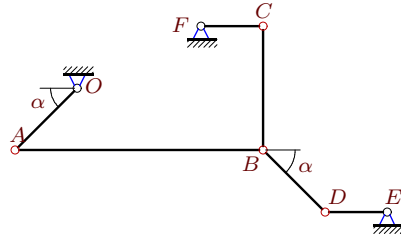
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$\omega_{OA_z} = -9, \omega_{CF_z} = 27, AB = 9, BC = 1,$
 $DE = 2, OA = CF = BD = 2\sqrt{2}.$

Задача К-25.18.

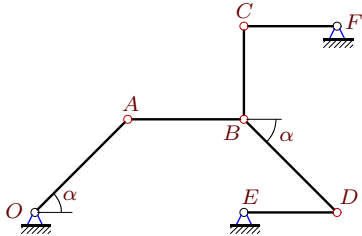
23



$\omega_{OA_z} = 2, \omega_{CF_z} = -2, AB = 8, BC = 4,$
 $DE = 2, CF = 2, OA = BD = 2\sqrt{2}.$

Задача К-25.19.

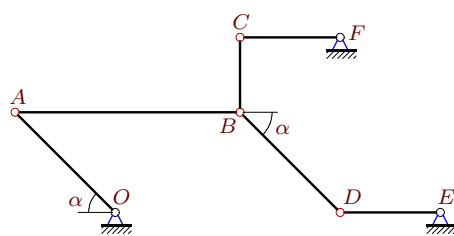
23



$\omega_{CF_z} = -15, \omega_{DE_z} = -5, AB = 5, BC = 4,$
 $DE = 4, CF = 4, OA = BD = 4\sqrt{2}.$

Задача К-25.20.

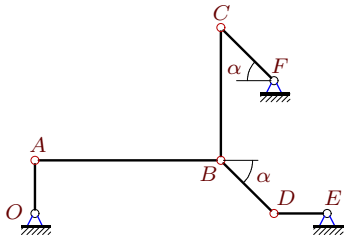
23



$\omega_{OA_z} = \omega_{CF_z} = 3, AB = 9, BC = 3,$
 $DE = 4, CF = 4, OA = BD = 4\sqrt{2}.$

Задача К-25.21.

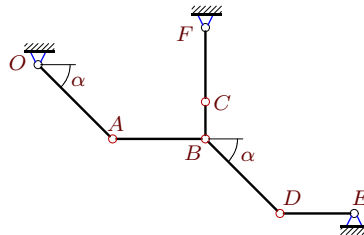
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$\omega_{OA_z} = \omega_{CF_z} = 7, AB = 7, BC = 5,$
 $DE = 2, OA = 2, CF = BD = 2\sqrt{2}.$

Задача К-25.22.

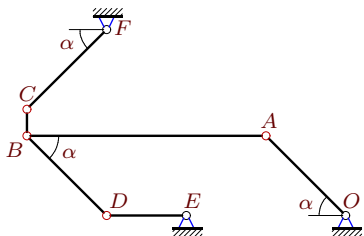
23



$\omega_{CF_z} = -15, \omega_{DE_z} = 5, AB = 5, BC = 2,$
 $DE = 4, CF = 4, OA = BD = 4\sqrt{2}.$

Задача К-25.23.

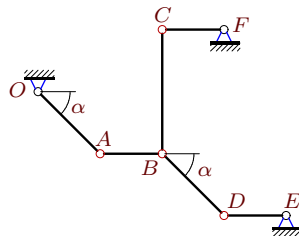
23



$\omega_{OA_z} = -3, \omega_{DE_z} = 6, AB = 9, BC = 1,$
 $DE = 3, OA = CF = BD = 3\sqrt{2}.$

Задача К-25.24.

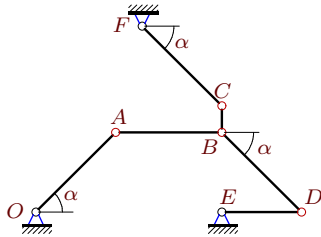
23



$\omega_{OA_z} = 2, \omega_{CF_z} = -2, AB = 2, BC = 4,$
 $DE = 2, CF = 2, OA = BD = 2\sqrt{2}.$

Задача К-25.25.

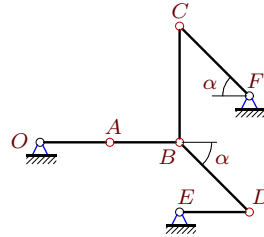
23



$\omega_{OA_z} = -2, \omega_{CF_z} = -6, AB = 4, BC = 1,$
 $DE = 3, OA = CF = BD = 3\sqrt{2}.$

Задача К-25.26.

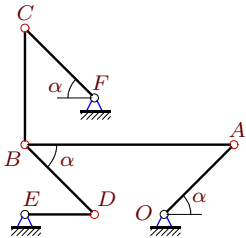
23



$\omega_{OA_z} = -5, \omega_{CF_z} = -10, AB = 3, BC = 5,$
 $DE = 3, OA = 3, CF = BD = 3\sqrt{2}.$

Задача К-25.27.

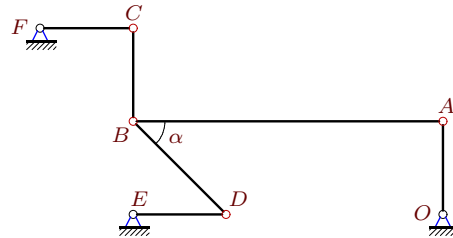
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$\omega_{OA_z} = -5, \omega_{DE_z} = 5, AB = 9, BC = 5,$
 $DE = 3, OA = CF = BD = 3\sqrt{2}.$

Задача К-25.28.

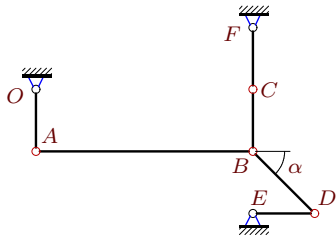
23



$\omega_{OA_z} = 10, \omega_{CF_z} = -10, AB = 10, BC = 3,$
 $DE = 3, OA = 3, CF = 3, BD = 3\sqrt{2}.$

Задача К-25.29.

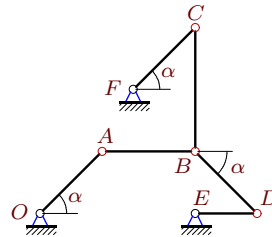
23



$\omega_{CF_z} = -3, \omega_{DE_z} = 1, AB = 7, BC = 2,$
 $DE = 2, OA = 2, CF = 2, BD = 2\sqrt{2}.$

Задача К-25.30.

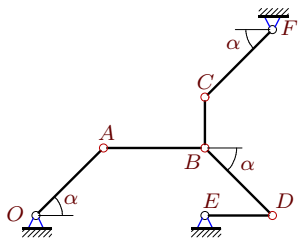
23



$\omega_{OA_z} = 6, \omega_{CF_z} = 12, AB = 6, BC = 8,$
 $DE = 4, OA = CF = BD = 4\sqrt{2}.$

Задача К-25.31.

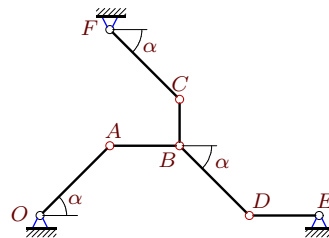
23



$\omega_{OA_z} = -3, \omega_{CF_z} = -9, AB = 6, BC = 3,$
 $DE = 4, OA = CF = BD = 4\sqrt{2}.$

Задача К-25.32.

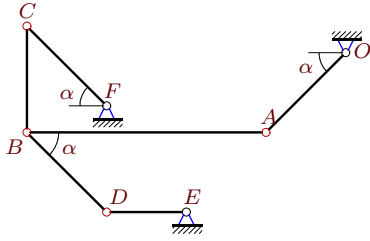
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$\omega_{OA_z} = 1, \omega_{CF_z} = 3, AB = 3, BC = 2,$
 $DE = 3, OA = CF = BD = 3\sqrt{2}.$

Задача К-25.33.

23

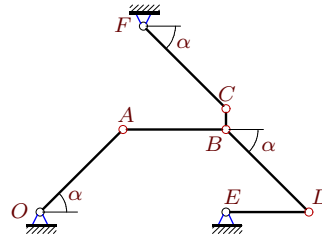


$\omega_{OA_z} = -6$, $\omega_{DE_z} = 12$, $AB = 9$, $BC = 4$,
 $DE = 3$, $OA = CF = BD = 3\sqrt{2}$.

К-25

Задача К-25.34.

23



$\omega_{CF_z} = 5$, $\omega_{DE_z} = -5$, $AB = 5$, $BC = 1$,
 $DE = 4$, $OA = CF = BD = 4\sqrt{2}$.

Ответы.

Механизм с двумя степенями свободы

23.04.2015

№	ω_{OA}	ω_{AB}	ω_{BC}	ω_{FC}	ω_{DB}	ω_{DE}
1	—	—6	7	0	—21	—
2	—30	18	—10	—	30	—
3	—	10	9	24	6	—
4	—	—4	0	—	—7	0
5	0	2	14	—	0	—
6	—	—5	9	30	15	—
7	—	0	8	—	3	3
8	—	—1	4	—	1	—2
9	—	—2	0	—	—3	0
10	1	1	4	—	—1	—
11	—	0	—4	—	—1	1
12	—	—4	24	—27	—9	—
13	—	0	4	—	—3	0
14	—	0	—6	—5	5	—
15	—	—2	—10	5	5	—
16	—	—6	—5	—15	5	—
17	—	4	—72	—	9	18
18	—	0	1	—	—2	4
19	—20	28	20	—	—20	—
20	—	0	—4	—	3	0
21	—	—2	0	—	7	0
22	5	—4	40	—	—5	—
23	—	2	0	3	—3	—
24	—	0	1	—	—2	0
25	—	—3	24	—	—2	—8
26	—	15	—6	—	0	10
27	—	—5	—3	—10	—5	—
28	—	3	—10	—	10	0
29	—1	0	2	—	1	—
30	—	4	3	—	6	18
31	—	8	16	—	—3	6
32	—	2	—6	—	1	—4
33	—	8	9	18	6	—
34	—10	12	20	—	—10	—