

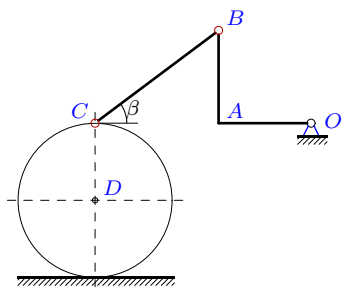
Скорости точек простого механизма (3 звена).

В указанном положении механизма задана угловая скорость одного из его звеньев (с^{-1}). Звенья, направление которых не указано, принимать вертикальными или горизонтальными. Радиус цилиндра R . Размеры даны в метрах. Найти угловые скорости звеньев и скорости точек A , B и C .

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

Задача К-17.1.

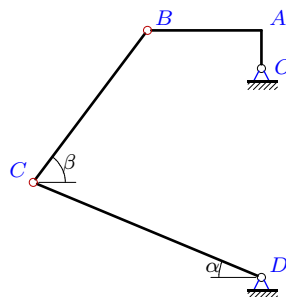
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$\omega_{OA_z} = 20$, $OA = AB = 3$, $OA \perp AB$,
 $BC = 2R = 5$, $\text{tg } \beta = 3/4$.

Задача К-17.2.

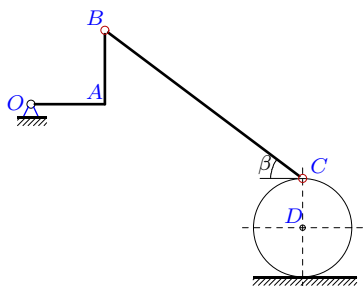
1



$\omega_{BC_z} = -1$, $OA = 2$, $AB = 6$, $OA \perp AB$,
 $BC = 10$, $DC = 13$, $\text{tg } \beta = 4/3$, $\text{tg } \alpha = 5/12$

Задача К-17.3.

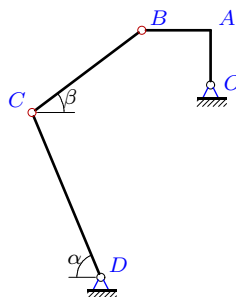
1



$\omega_{DC_z} = 21$, $OA = AB = 3$, $OA \perp AB$,
 $BC = 10$, $R = 2$, $\text{tg } \beta = 3/4$.

Задача К-17.4.

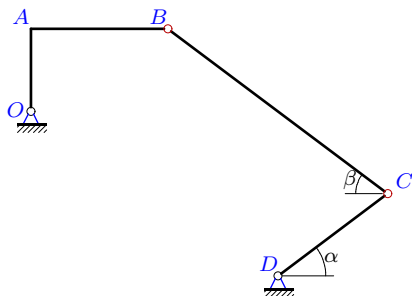
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$\omega_{OA_z} = 63$, $OA = 4$, $AB = 5$, $OA \perp AB$,
 $BC = 10$, $DC = 13$, $\text{tg } \beta = 3/4$, $\text{tg } \alpha = 12/5$

Задача К-17.5.

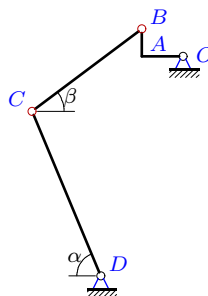
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$\omega_{DC_z} = 18$, $OA = 3$, $AB = 5$, $OA \perp AB$,
 $BC = 10$, $DC = 5$, $\text{tg } \alpha = \text{tg } \beta = 3/4$

Задача К-17.6.

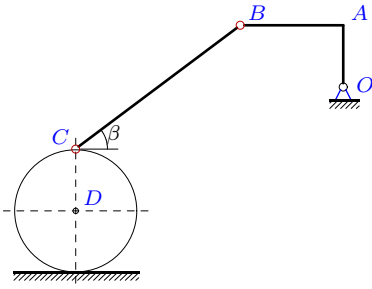
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$\omega_{OA_z} = 63$, $OA = 3$, $AB = 2$, $OA \perp AB$,
 $BC = 10$, $DC = 13$, $\text{tg } \beta = 3/4$, $\text{tg } \alpha = 12/5$

Задача К-17.7.

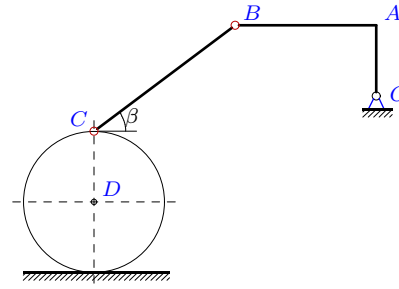
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$\omega_{BCz} = -5$, $OA = 3$, $AB = 5$, $OA \perp AB$,
 $BC = 10$, $R = 3$, $\operatorname{tg} \beta = 3/4$.

Задача К-17.8.

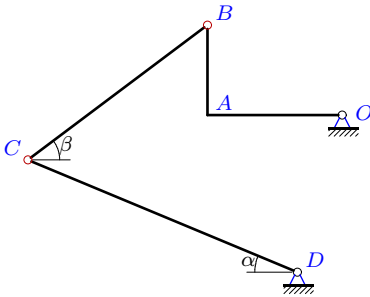
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$\omega_{BCz} = -4$, $OA = 2$, $AB = 4$, $OA \perp AB$,
 $BC = 5$, $R = 2$, $\operatorname{tg} \beta = 3/4$.

Задача К-17.9.

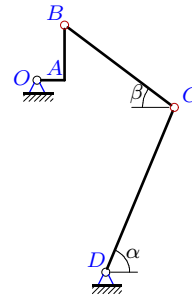
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$\omega_{BCz} = 9$, $OA = 6$, $AB = 4$, $OA \perp AB$,
 $BC = 10$, $DC = 13$, $\operatorname{tg} \beta = 3/4$, $\operatorname{tg} \alpha = 5/12$

Задача К-17.10.

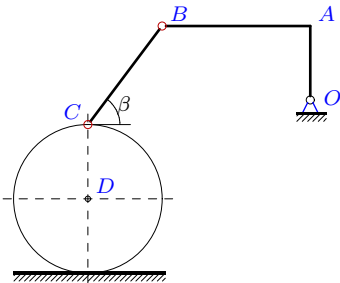
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$\omega_{OAz} = 63$, $OA = 2$, $AB = 4$, $OA \perp AB$,
 $BC = 10$, $DC = 13$, $\operatorname{tg} \beta = 3/4$, $\operatorname{tg} \alpha = 12/5$

Задача К-17.11.

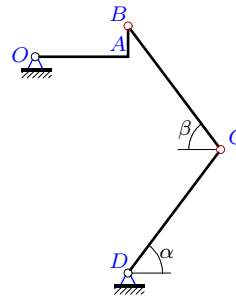
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$\omega_{BCz} = -12$, $OA = 3$, $AB = 6$, $OA \perp AB$,
 $BC = 5$, $R = 3$, $\operatorname{tg} \beta = 4/3$.

Задача К-17.12.

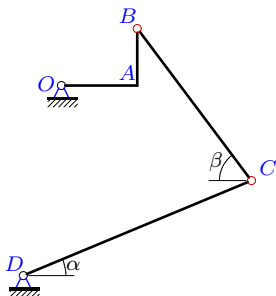
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$\omega_{DCz} = 5$, $OA = 6$, $AB = 2$, $OA \perp AB$,
 $BC = DC = 10$, $\operatorname{tg} \alpha = \operatorname{tg} \beta = 4/3$

Задача К-17.13.

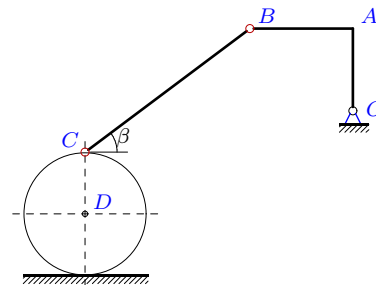
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$\omega_{BCz} = 8$, $OA = 4$, $AB = 3$, $OA \perp AB$,
 $BC = 10$, $DC = 13$, $\operatorname{tg} \beta = 4/3$, $\operatorname{tg} \alpha = 5/12$

Задача К-17.14.

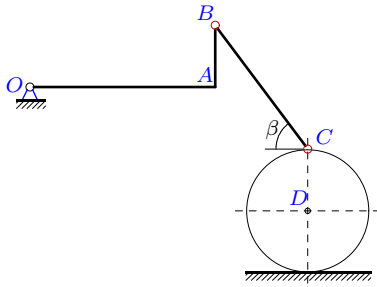
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$\omega_{DCz} = 31$, $OA = 4$, $AB = 5$, $OA \perp AB$,
 $BC = 10$, $R = 3$, $\operatorname{tg} \beta = 3/4$.

Задача К-17.15.

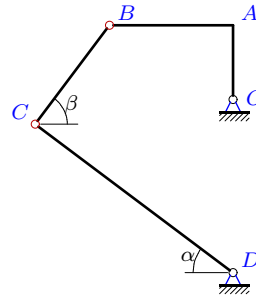
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$\omega_{DCz} = 5$, $OA = 6$, $AB = 2$, $OA \perp AB$,
 $BC = 5$, $R = 2$, $\operatorname{tg} \beta = 4/3$.

Задача К-17.16.

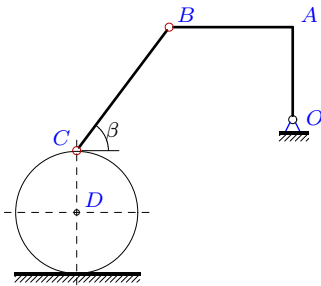
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$\omega_{DCz} = 29$, $OA = 3$, $AB = 5$, $OA \perp AB$,
 $BC = 5$, $DC = 10$, $\operatorname{tg} \beta = 4/3$, $\operatorname{tg} \alpha = 3/4$

Задача К-17.17.

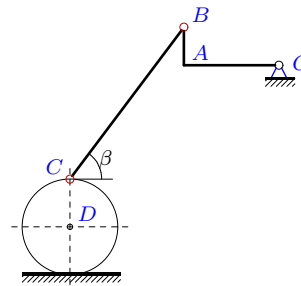
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$\omega_{OAz} = 12$, $OA = 3$, $AB = 4$, $OA \perp AB$,
 $BC = 5$, $R = 2$, $\operatorname{tg} \beta = 4/3$.

Задача К-17.18.

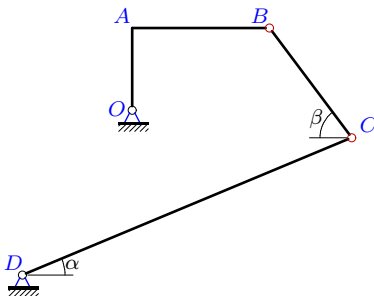
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$\omega_{DCz} = 52$, $OA = 5$, $AB = 2$, $OA \perp AB$,
 $BC = 10$, $R = 2.5$, $\operatorname{tg} \beta = 4/3$.

Задача К-17.19.

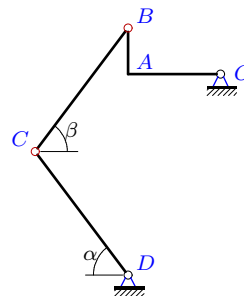
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$\omega_{BCz} = 11$, $OA = 3$, $AB = 5$, $OA \perp AB$,
 $BC = 5$, $DC = 13$, $\operatorname{tg} \beta = 4/3$, $\operatorname{tg} \alpha = 5/12$

Задача К-17.20.

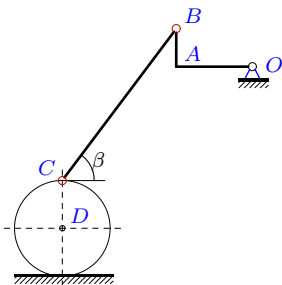
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$\omega_{DCz} = 11$, $OA = 6$, $AB = 3$, $OA \perp AB$,
 $BC = DC = 10$, $\operatorname{tg} \alpha = \operatorname{tg} \beta = 4/3$

Задача К-17.21.

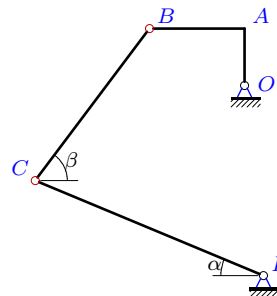
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$\omega_{BCz} = -10$, $OA = 4$, $AB = 2$, $OA \perp AB$,
 $BC = 10$, $R = 2.5$, $\operatorname{tg} \beta = 4/3$.

Задача К-17.22.

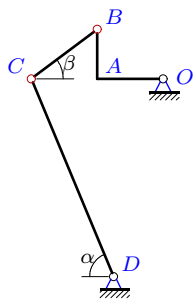
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$\omega_{BCz} = 11$, $OA = 3$, $AB = 5$, $OA \perp AB$,
 $BC = 10$, $DC = 13$, $\operatorname{tg} \beta = 4/3$, $\operatorname{tg} \alpha = 5/12$

Задача К-17.23.

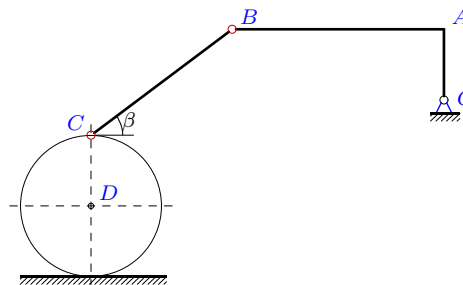
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$\omega_{OA_z} = 21$, $OA = 4$, $AB = 3$, $OA \perp AB$,
 $BC = 5$, $DC = 13$, $\operatorname{tg} \beta = 3/4$, $\operatorname{tg} \alpha = 12/5$

Задача К-17.24.

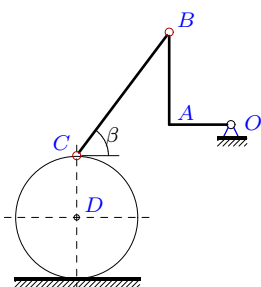
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$\omega_{DC_z} = 13$, $OA = 2$, $AB = 6$, $OA \perp AB$,
 $BC = 5$, $R = 2$, $\operatorname{tg} \beta = 3/4$.

Задача К-17.25.

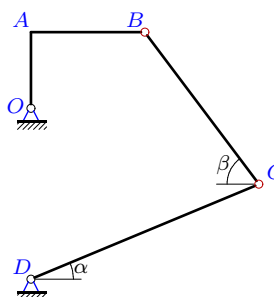
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$\omega_{DC_z} = 17$, $OA = 2$, $AB = 3$, $OA \perp AB$,
 $BC = 5$, $R = 2$, $\operatorname{tg} \beta = 4/3$.

Задача К-17.26.

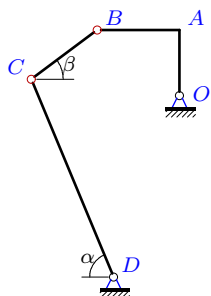
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$\omega_{BC_z} = 1$, $OA = 4$, $AB = 6$, $OA \perp AB$,
 $BC = 10$, $DC = 13$, $\operatorname{tg} \beta = 4/3$, $\operatorname{tg} \alpha = 5/12$

Задача К-17.27.

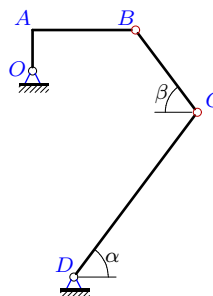
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$\omega_{OA_z} = 63$, $OA = 4$, $AB = 5$, $OA \perp AB$,
 $BC = 5$, $DC = 13$, $\operatorname{tg} \beta = 3/4$, $\operatorname{tg} \alpha = 12/5$

Задача К-17.28.

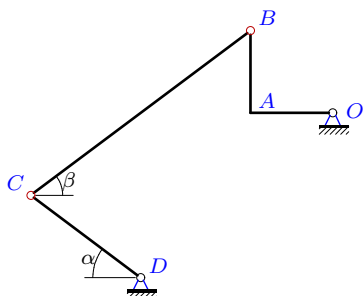
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$\omega_{DC_z} = 13$, $OA = 2$, $AB = 5$, $OA \perp AB$,
 $BC = 5$, $DC = 10$, $\operatorname{tg} \alpha = \operatorname{tg} \beta = 4/3$

Задача К-17.29.

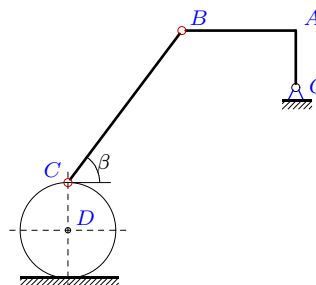
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$\omega_{DC_z} = 14$, $OA = AB = 3$, $OA \perp AB$,
 $BC = 10$, $DC = 5$, $\operatorname{tg} \alpha = \operatorname{tg} \beta = 3/4$

Задача К-17.30.

1



$\omega_{BC_z} = -5$, $OA = 3$, $AB = 6$, $OA \perp AB$,
 $BC = 10$, $R = 2.5$, $\operatorname{tg} \beta = 4/3$.

Ответы.**Скорости точек простого механизма (3 звена).**

01.12.2014

№	ω_{OAz}	ω_{BCz}	ω_{CDz}	v_A	v_B	v_C
1	—	—15	21	60	84.85	105
2	21	—	10	42	132.82	130
3	16	—6	—	48	67.88	84
4	—	—20	31	252	403.4	403
5	16	—1	—	48	93.3	90
6	—	—13	17	189	227.15	221
7	8	—	9	24	46.65	54
8	4	—	5	8	17.89	20
9	56	—	34	336	403.82	442
10	—	—2	22	126	281.74	286
11	6	—	11	18	40.25	66
12	8	—3	—	48	50.6	50
13	63	—	25	252	315	325
14	24	—15	—	96	153.67	186
15	2	—4	—	12	12.65	20
16	50	—6	—	150	291.55	290
17	—	—16	25	36	60	100
18	30	—25	—	150	161.55	260
19	63	—	29	189	367.35	377
20	16	—5	—	96	107.33	110
21	15	—	22	60	67.08	110
22	126	—	58	378	734.7	754
23	—	—11	8	84	105	104
24	8	—12	—	16	50.6	52
25	12	—8	—	24	43.27	68
26	7	—	4	28	50.48	52
27	—	—40	31	252	403.4	403
28	24	—14	—	48	129.24	130
29	16	1	—	48	67.88	70
30	5	—	11	15	33.54	55