

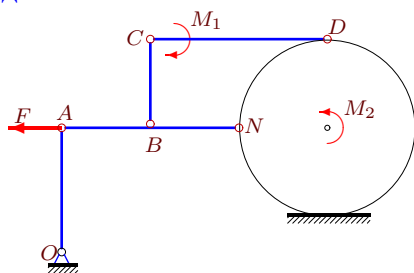
Принцип возможных перемещений (2)

Механизм с идеальными стационарными связями находится в равновесии под действием силы F и моментов M_1 , M_2 . Длины звеньев даны в сантиметрах. Стержни, направление которых не указано, считать горизонтальными или вертикальными. Диск касается горизонтальной поверхности без проскальзывания. Найти величину F .

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

Задача 34.1.

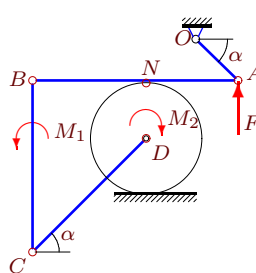
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$M_1 = 532$, $M_2 = 553$, $R = 5$, $OA = 7$,
 $AB = 5$, $BN = BC = 5$, $CD = 10$.

Задача 34.2.

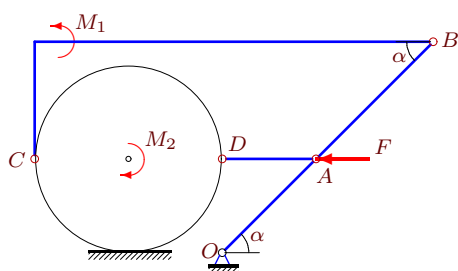
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$M_1 = 663$, $M_2 = 605$, $R = 8$, $OA = 6\sqrt{2}$,
 $CD = 16\sqrt{2}$, $AN = 13$, $AB = 29$, $\alpha = 45^\circ$.

Задача 34.3.

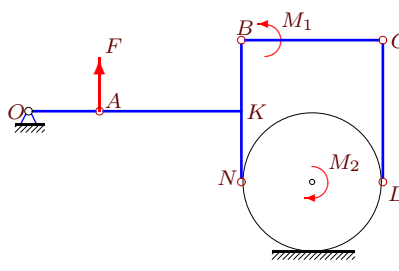
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$M_1 = 21$, $M_2 = 34$, $R = 4$, $OA = 4\sqrt{2}$,
 $AB = 5\sqrt{2}$, $AD = 4$, $\alpha = 45^\circ$.

Задача 34.4.

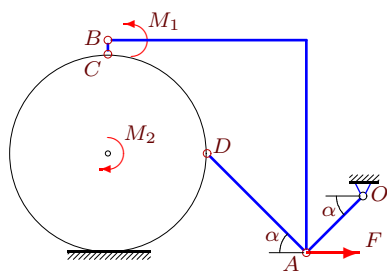
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$M_1 = M_2 = 8$, $R = 3$, $OA = 3$,
 $AK = 6$, $BK = 3$, $KN = 3$, $CD = 6$.

Задача 34.5.

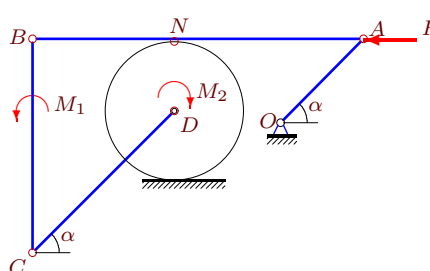
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$M_1 = 88$, $M_2 = 170$, $R = 7$, $OA = 4\sqrt{2}$,
 $AD = 7\sqrt{2}$, $BC = 1$, $\alpha = 45^\circ$.

Задача 34.6.

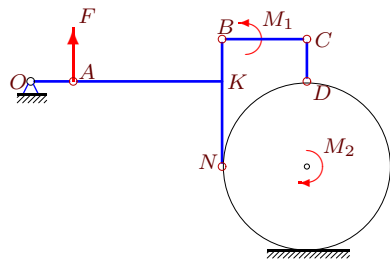
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$M_1 = 924$, $M_2 = 70$, $R = 6$, $OA = 7\sqrt{2}$,
 $CD = 12\sqrt{2}$, $AN = 16$, $AB = 28$, $\alpha = 45^\circ$.

Задача 34.7.

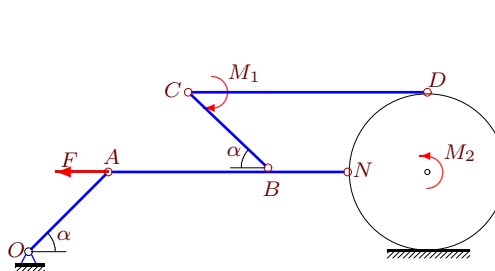
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$M_1 = 28$, $M_2 = 22$, $R = 4$, $OA = 2$,
 $AK = 7$, $BK = 2$, $KN = 4$, $CD = 2$.

Задача 34.8.

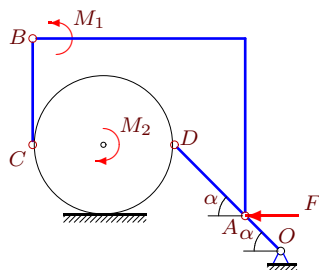
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$M_1 = 306$, $M_2 = 374$, $R = 7$, $OA = 7\sqrt{2}$,
 $AB = 14$, $BN = 7$, $BC = 7\sqrt{2}$, $CD = 21$, $\alpha = 45^\circ$.

Задача 34.9.

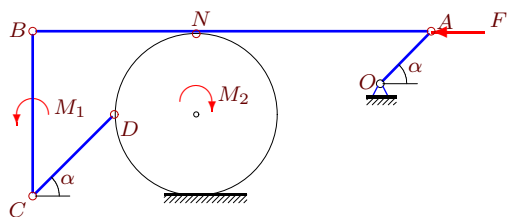
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$M_1 = 108$, $M_2 = 273$, $R = 6$, $OA = 3\sqrt{2}$,
 $AD = 6\sqrt{2}$, $BC = 9$, $\alpha = 45^\circ$.

Задача 34.11.

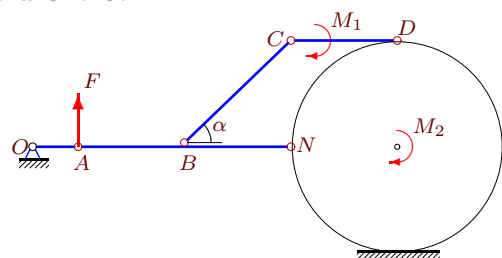
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$M_1 = 115$, $M_2 = 80$, $R = 8$, $OA = 5\sqrt{2}$,
 $CD = 8\sqrt{2}$, $AN = 23$, $AB = 39$, $\alpha = 45^\circ$.

Задача 34.13.

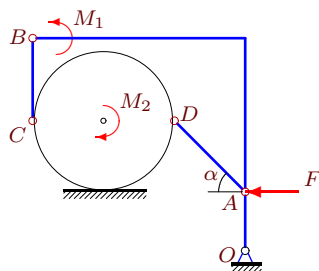
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$M_1 = 84$, $M_2 = 255$, $R = 7$, $OA = 3$,
 $AB = 7$, $BN = 7$, $BC = 7\sqrt{2}$, $CD = 7$, $\alpha = 45^\circ$

Задача 34.15.

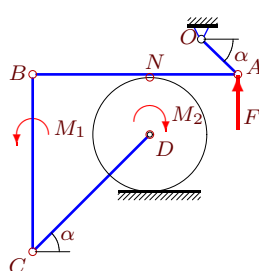
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$M_1 = 1155$, $M_2 = 1225$, $R = 6$, $OA = 5$,
 $AD = 6\sqrt{2}$, $BC = 7$, $\alpha = 45^\circ$.

Задача 34.17.

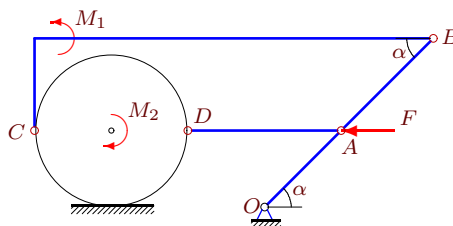
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$M_1 = 765$, $M_2 = 25$, $R = 8$, $OA = 5\sqrt{2}$,
 $CD = 16\sqrt{2}$, $AN = 12$, $AB = 28$, $\alpha = 45^\circ$.

Задача 34.10.

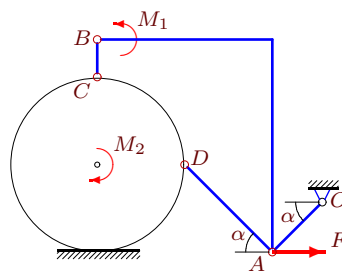
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$M_1 = 18$, $M_2 = 39$, $R = 5$, $OA = 5\sqrt{2}$,
 $AB = 6\sqrt{2}$, $AD = 10$, $\alpha = 45^\circ$.

Задача 34.12.

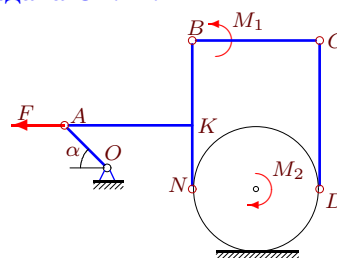
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$M_1 = 116$, $M_2 = 170$, $R = 7$, $OA = 4\sqrt{2}$,
 $AD = 7\sqrt{2}$, $BC = 3$, $\alpha = 45^\circ$.

Задача 34.14.

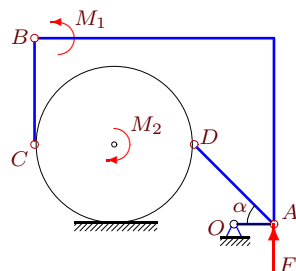
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$M_1 = 28$, $M_2 = 16$, $R = 3$, $OA = 2\sqrt{2}$,
 $AK = 6$, $BK = 4$, $KN = 3$, $CD = 7$, $\alpha = 45^\circ$.

Задача 34.16.

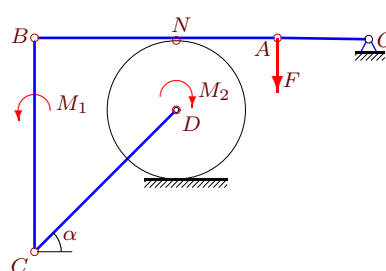
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$M_1 = M_2 = 59$, $R = 6$, $OA = 3$,
 $AD = 6\sqrt{2}$, $BC = 8$, $\alpha = 45^\circ$.

Задача 34.18.

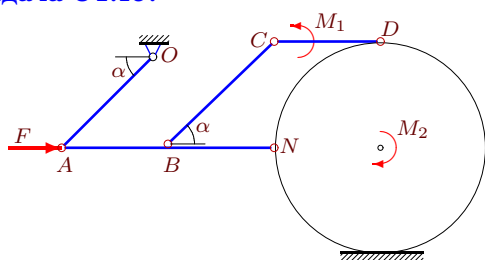
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$M_1 = 270$, $M_2 = 456$, $R = 7$, $OA = 9$,
 $CD = 14\sqrt{2}$, $AN = 10$, $AB = 24$, $\alpha = 45^\circ$.

Задача 34.19.

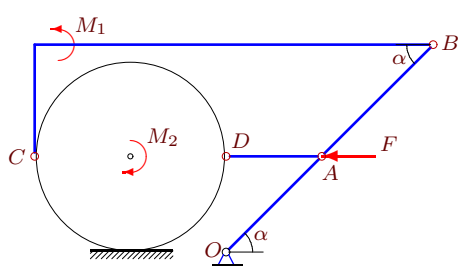
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$M_1 = 174$, $M_2 = 246$, $R = 7$, $OA = 6\sqrt{2}$,
 $AB = 7$, $BN = 7$, $BC = 7\sqrt{2}$, $CD = 7$, $\alpha = 45^\circ$

Задача 34.21.

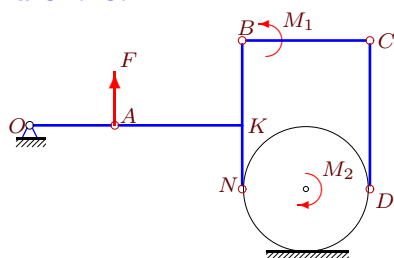
12



$M_1 = 33$, $M_2 = 88$, $R = 6$, $OA = 6\sqrt{2}$,
 $AB = 7\sqrt{2}$, $AD = 6$, $\alpha = 45^\circ$.

Задача 34.23.

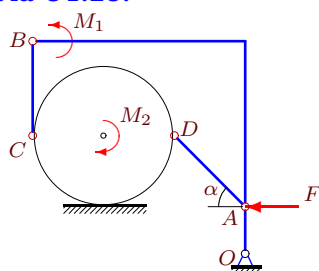
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$M_1 = 56$, $M_2 = 32$, $R = 3$, $OA = 4$,
 $AK = 6$, $BK = 4$, $KN = 3$, $CD = 7$.

Задача 34.25.

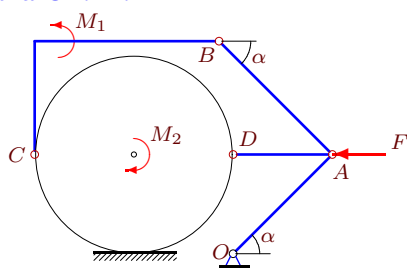
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$M_1 = 177$, $M_2 = 179$, $R = 6$, $OA = 4$,
 $AD = 6\sqrt{2}$, $BC = 8$, $\alpha = 45^\circ$.

Задача 34.27.

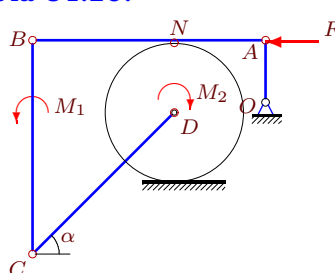
12



$M_1 = 39$, $M_2 = 124$, $R = 7$, $OA = 7\sqrt{2}$,
 $AB = 8\sqrt{2}$, $AD = 7$, $\alpha = 45^\circ$.

Задача 34.20.

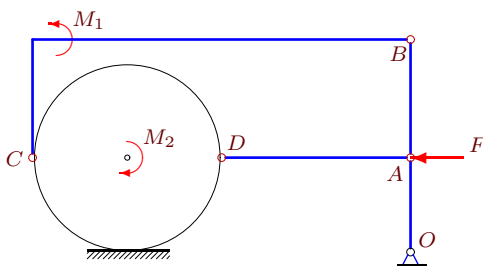
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$M_1 = 165$, $M_2 = 293$, $R = 7$, $OA = 6$,
 $CD = 14\sqrt{2}$, $AN = 9$, $AB = 23$, $\alpha = 45^\circ$.

Задача 34.22.

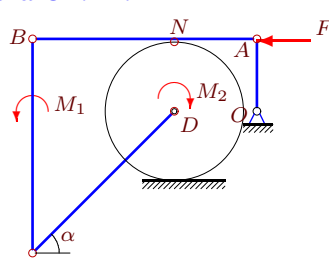
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$M_1 = 44$, $M_2 = 47$, $R = 4$, $OA = 4$,
 $AB = 5$, $AD = 8$.

Задача 34.24.

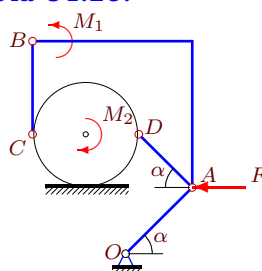
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$M_1 = 285$, $M_2 = 143$, $R = 6$, $OA = 6$,
 $CD = 12\sqrt{2}$, $AN = 7$, $AB = 19$, $\alpha = 45^\circ$.

Задача 34.26.

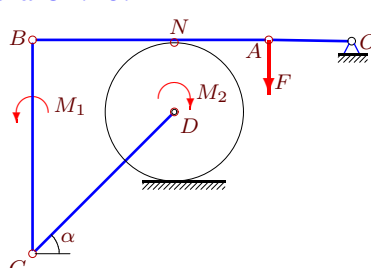
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$M_1 = 315$, $M_2 = 350$, $R = 4$, $OA = 5\sqrt{2}$,
 $AD = 4\sqrt{2}$, $BC = 7$, $\alpha = 45^\circ$.

Задача 34.28.

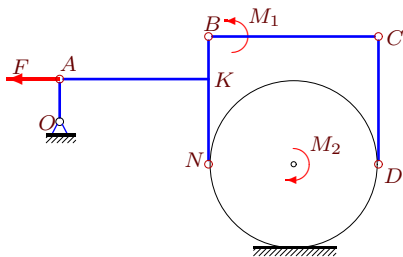
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$M_1 = 336$, $M_2 = 350$, $R = 6$, $OA = 7$,
 $CD = 12\sqrt{2}$, $AN = 8$, $AB = 20$, $\alpha = 45^\circ$.

Задача 34.29.

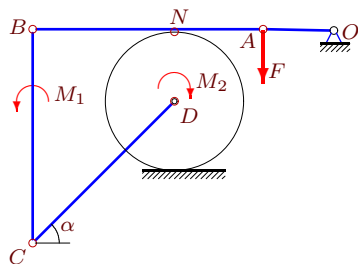
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$M_1 = M_2 = 41$, $R = 4$, $OA = 2$,
 $AK = 7$, $BK = 2$, $KN = 4$, $CD = 6$.

Задача 34.31.

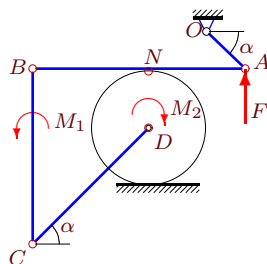
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$M_1 = 120$, $M_2 = 248$, $R = 8$, $OA = 8$,
 $CD = 16\sqrt{2}$, $AN = 10$, $AB = 26$, $\alpha = 45^\circ$.

Задача 34.33.

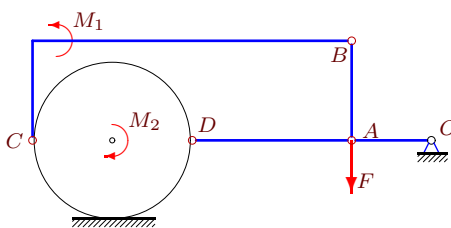
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$M_1 = 375$, $M_2 = 353$, $R = 6$, $OA = 4\sqrt{2}$,
 $CD = 12\sqrt{2}$, $AN = 10$, $AB = 22$, $\alpha = 45^\circ$.

Задача 34.30.

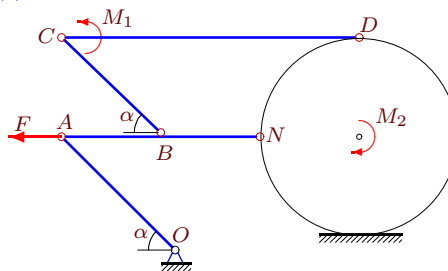
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$M_1 = 80$, $M_2 = 49$, $R = 4$, $OA = 4$,
 $AB = 5$, $AD = 8$.

Задача 34.32.

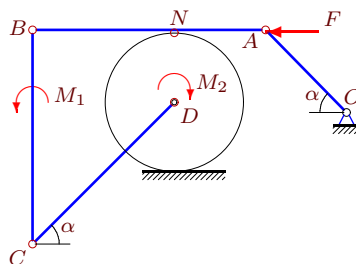
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$M_1 = 648$, $M_2 = 992$, $R = 7$, $OA = 8\sqrt{2}$,
 $AB = 7$, $BN = 7$, $BC = 7\sqrt{2}$, $CD = 21$, $\alpha = 45^\circ$

Задача 34.34.

12



$M_1 = 108$, $M_2 = 76$, $R = 7$, $OA = 8\sqrt{2}$,
 $CD = 14\sqrt{2}$, $AN = 9$, $AB = 23$, $\alpha = 45^\circ$.

Принцип возможных перемещений (2)

№	ω_{AB_z}	ω_{BC_z}	ω_{CD_z}	ω_{DA_z}	$\omega_{\text{диск}_z}$	ω_{OA_z}	F
1	-14	28	7	—	28	20	-84
2	48	19	48	—	-39	104	-58
3	2	2	—	0	3	3	5
4	-1	1	-1	—	1	1	0
5	-2	-2	—	0	-4	7	-18
6	63	70	63	—	84	144	-70
7	-2	2	-10	—	2	3	-2
8	-6	9	4	—	9	9	-34
9	-3	1	—	-9	0	18	6
10	1	1	—	0	2	2	6
11	80	80	45	—	115	368	0
12	-2	-2	—	0	-4	7	-16
13	-3	0	-3	—	0	14	-6
14	0	2	0	—	2	3	-4
15	35	155	—	-105	105	252	70
16	1	1	—	1	1	4	0
17	60	25	60	—	-45	144	-25
18	-9	-6	-9	—	0	10	18
19	6	-6	6	—	-6	7	60
20	0	1	0	—	3	7	17
21	2	2	—	0	3	3	11
22	1	1	—	-2	4	4	9
23	-4	4	-4	—	4	3	-8
24	0	1	0	—	3	6	4
25	1	4	—	-3	3	9	10
26	70	110	—	0	105	84	35
27	2	2	—	0	3	3	14
28	-21	-14	-21	—	0	24	28
29	-4	7	-4	—	7	6	0
30	-1	-1	—	-2	0	4	5
31	-12	-8	-12	—	0	15	8
32	0	24	16	—	24	21	-80
33	18	7	18	—	-15	45	-44
34	-168	-76	-168	—	108	189	0