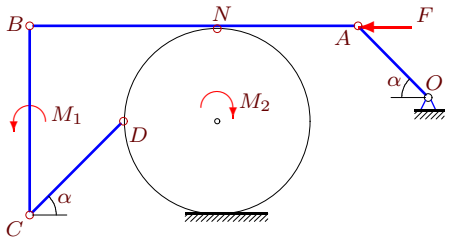
Принцип возможных перемещений (2)

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.

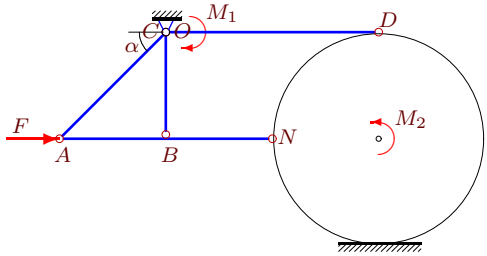
Кирсанов М.Н. **Решебник. Теоретическая механика**/Под ред. А. И. Кириллова.– М.: ФИЗМАТЛИТ, 2008. — 384 с. (с.158.)

Задача 34.1.



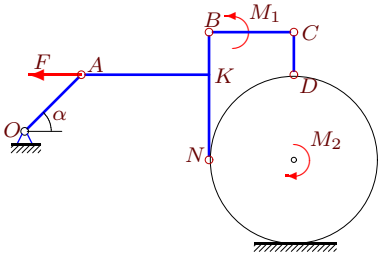
$M_1 = 141$, $M_2 = 580$, $R = 8$, $OA = 6\sqrt{2}$, $CD = 8\sqrt{2}$, $AN = 12$, $AB = 28$, $\alpha = 45°$.

Задача 34.2.



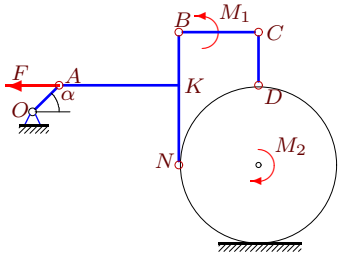
$M_1 = 13$, $M_2 = 30$, $R = 6$, $OA = 6\sqrt{2}$, $AB = 6$, $BN = BC = 6$, $CD = 12$, α=45°

Задача 34.3.



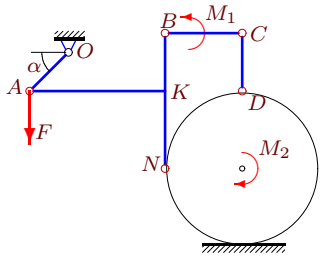
$M_1 = 38$, $M_2 = 62$, $R = 6$, $OA = 4\sqrt{2}$, $AK = 9$, $BK = 3$, $KN = 6$, $CD = 3$, $\alpha = 45°$.

Задача 34.4.



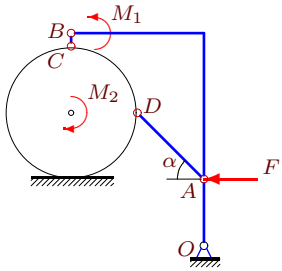
$M_1 = 38$, $M_2 = 62$, $R = 6$, $OA = 2\sqrt{2}$, $AK = 9$, $BK = 4$, $KN = 6$, $CD = 4$, $\alpha = 45°$.

Задача 34.5.



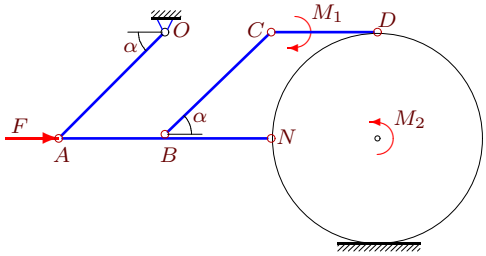
$M_1 = 105$, $M_2 = 177$, $R = 4$, $OA = 2\sqrt{2}$, $AK = 7$, $BK = 3$, $KN = 4$, $CD = 3$, $\alpha = 45°$.

Задача 34.6.



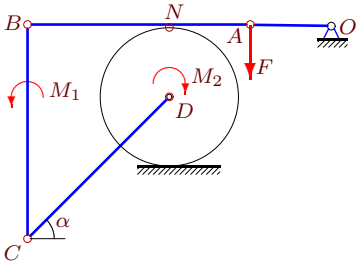
$M_1 = 19$, $M_2 = 40$, $R = 5$, $OA = 5$, $AD = 5\sqrt{2}$, $BC = 1$, $\alpha = 45°$.

Задача 34.7.



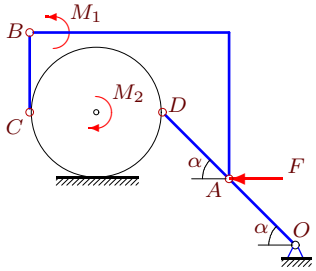
$M_1 = 36$, $M_2 = 41$, $R = 7$, $OA = 7\sqrt{2}$, $AB = 7$, $BN = 7$, $BC = 7\sqrt{2}$, $CD = 7$, α=45°

Задача 34.8.



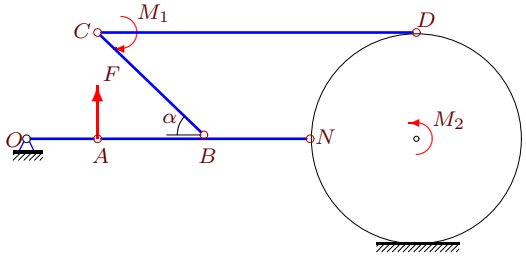
$M_1 = 288$, $M_2 = 146$, $R = 7$, $OA = 8$, $CD = 14\sqrt{2}$, $AN = 8$, $AB = 22$, $\alpha = 45°$.

Задача 34.9.



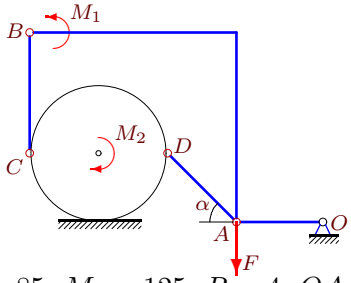
$M_1 = 180,\ M_2 = 183,\ R = 5,\ OA = 5\sqrt{2},$
$AD = 5\sqrt{2},\ BC = 6,\ \alpha = 45°.$

Задача 34.10.



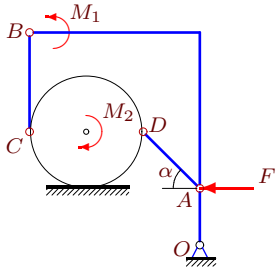
$M_1 = 72,\ M_2 = 181,\ R = 6,\ OA = 4,$
$AB = 6,\ BN = 6,\ BC = 6\sqrt{2},\ CD = 18,\ \alpha$=45°

Задача 34.11.



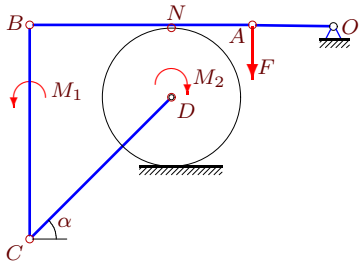
$M_1 = 85,\ M_2 = 125,\ R = 4,\ OA = 5,$
$AD = 4\sqrt{2},\ BC = 7,\ \alpha = 45°.$

Задача 34.12.



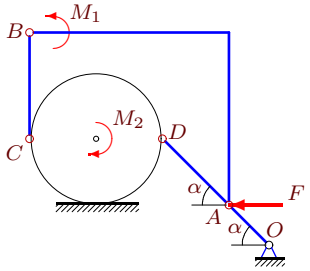
$M_1 = 819,\ M_2 = 497,\ R = 4,\ OA = 4,$
$AD = 4\sqrt{2},\ BC = 7,\ \alpha = 45°.$

Задача 34.13.



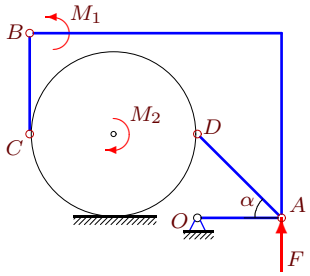
$M_1 = 288,\ M_2 = 146,\ R = 7,\ OA = 8,$
$CD = 14\sqrt{2},\ AN = 8,\ AB = 22,\ \alpha = 45°.$

Задача 34.14.



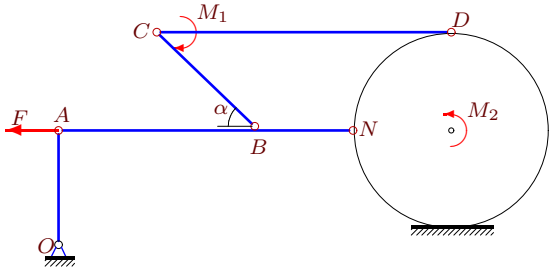
$M_1 = 300,\ M_2 = 244,\ R = 5,\ OA = 3\sqrt{2},$
$AD = 5\sqrt{2},\ BC = 8,\ \alpha = 45°.$

Задача 34.15.



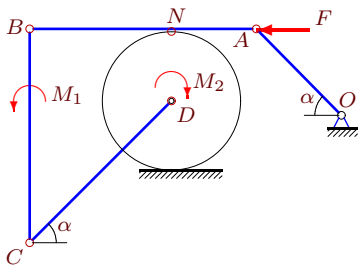
$M_1 = M_2 = 39,\ R = 5,\ OA = 5,$
$AD = 5\sqrt{2},\ BC = 6,\ \alpha = 45°.$

Задача 34.16.



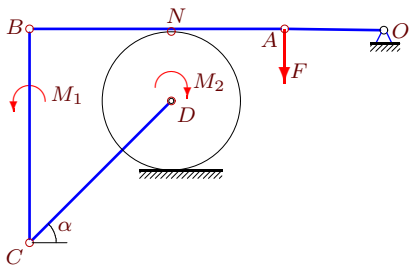
$M_1 = 1449,\ M_2 = 1855,\ R = 6,\ OA = 7,$
$AB = 12,\ BN = 6,\ BC = 6\sqrt{2},\ CD = 18,\ \alpha$=45°

Задача 34.17.



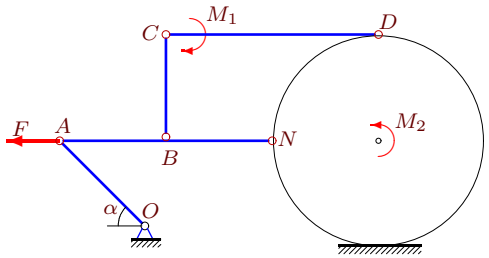
$M_1 = 261,\ M_2 = 187,\ R = 5,\ OA = 6\sqrt{2},$
$CD = 10\sqrt{2},\ AN = 6,\ AB = 16,\ \alpha = 45°.$

Задача 34.18.



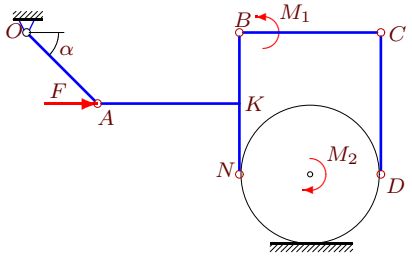
$M_1 = 336,\ M_2 = 518,\ R = 5,\ OA = 7,$
$CD = 10\sqrt{2},\ AN = 8,\ AB = 18,\ \alpha = 45°.$

Задача 34.19. II



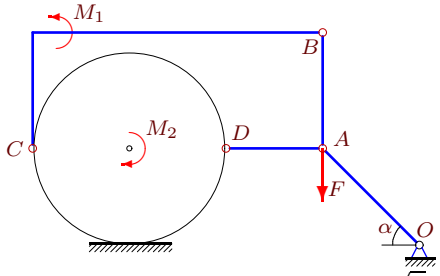
$M_1 = 36,\ M_2 = 78,\ R = 5,\ OA = 4\sqrt{2},$
$AB = 5,\ BN = BC = 5,\ CD = 10,\ \alpha$=45°

Задача 34.20. II



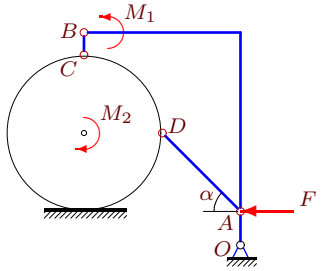
$M_1 = 13,\ M_2 = 10,\ R = 3,\ OA = 3\sqrt{2},$
$AK = 6,\ BK = 3,\ KN = 3,\ CD = 6,\ \alpha = 45°.$

Задача 34.21. II



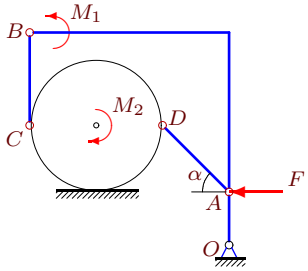
$M_1 = 19,\ M_2 = 20,\ R = 5,\ OA = 5\sqrt{2},$
$AB = 6,\ AD = 5,\ \alpha = 45°.$

Задача 34.22. II



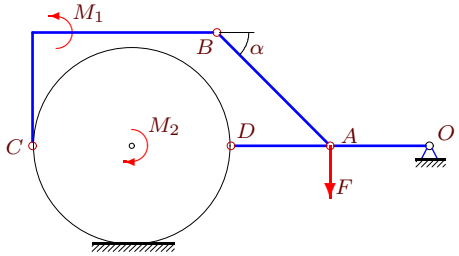
$M_1 = 81,\ M_2 = 252,\ R = 7,\ OA = 3,$
$AD = 7\sqrt{2},\ BC = 2,\ \alpha = 45°.$

Задача 34.23. II



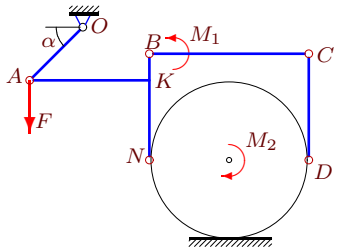
$M_1 = 378,\ M_2 = 406,\ R = 5,\ OA = 4,$
$AD = 5\sqrt{2},\ BC = 7,\ \alpha = 45°.$

Задача 34.24. II



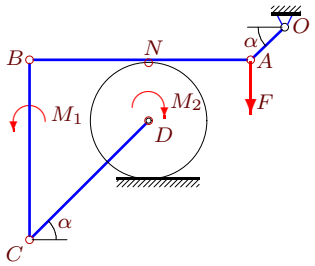
$M_1 = 105,\ M_2 = 127,\ R = 7,\ OA = 7,$
$AB = 8\sqrt{2},\ AD = 7,\ \alpha = 45°.$

Задача 34.25. II



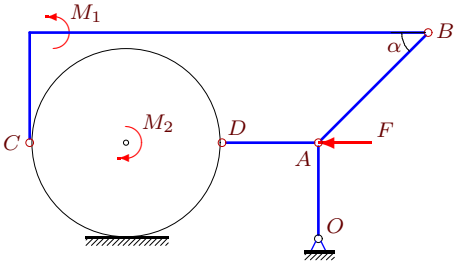
$M_1 = 46,\ M_2 = 82,\ R = 6,\ OA = 4\sqrt{2},$
$AK = 9,\ BK = 2,\ KN = 6,\ CD = 8,\ \alpha = 45°.$

Задача 34.26. II



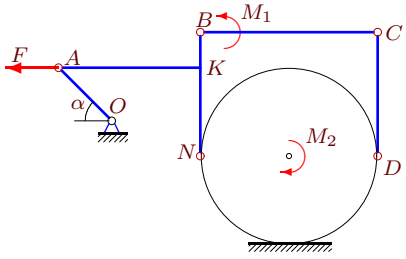
$M_1 = 522,\ M_2 = 524,\ R = 7,\ OA = 4\sqrt{2},$
$CD = 14\sqrt{2},\ AN = 12,\ AB = 26,\ \alpha = 45°.$

Задача 34.27. II



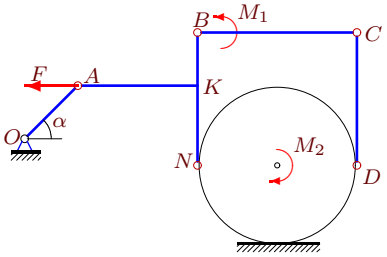
$M_1 = 60,\ M_2 = 125,\ R = 7,\ OA = 7,$
$AB = 8\sqrt{2},\ AD = 7,\ \alpha = 45°.$

Задача 34.28. II



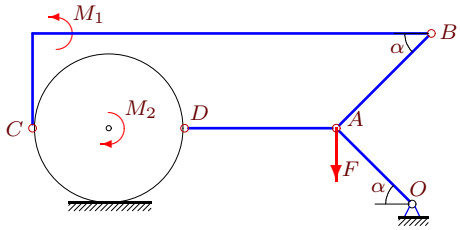
$M_1 = M_2 = 72,\ R = 5,\ OA = 3\sqrt{2},$
$AK = 8,\ BK = 2,\ KN = 5,\ CD = 7,\ \alpha = 45°.$

Задача 34.29. *II*



$M_1 = 50$, $M_2 = 62$, $R = 6$, $OA = 4\sqrt{2}$,
$AK = 9$, $BK = 4$, $KN = 6$, $CD = 10$, $\alpha = 45°$.

Задача 34.30. *II*



$M_1 = 15$, $M_2 = 12$, $R = 4$, $OA = 4\sqrt{2}$,
$AB = 5\sqrt{2}$, $AD = 8$, $\alpha = 45°$.

34.11

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	-4	-4	-11	–	3	8	48
2	1	-1	0	–	-1	1	5
3	-8	10	-44	–	10	3	20
4	-8	10	-35	–	10	6	20
5	24	-33	100	–	-33	18	−66
6	0	0	–	-1	1	2	4
7	1	-1	1	–	-1	1	11
8	-3	-2	-3	–	0	3	24
9	-3	2	–	-9	0	9	12
10	-3	0	-1	–	0	9	−2
11	-5	-5	–	-5	-5	8	−5
12	7	23	–	-21	21	42	28
13	-3	-2	-3	–	0	3	24
14	-4	1	–	-12	0	20	20
15	1	1	–	1	1	2	0
16	-21	63	35	–	63	54	−175
17	-15	-7	-15	–	9	15	39
18	-21	-14	-21	–	0	24	28
19	0	4	2	–	4	5	−12
20	0	-1	0	–	-1	1	1
21	0	0	–	-2	1	1	4
22	0	0	–	-3	3	14	18
23	14	54	–	-42	42	105	28
24	-1	-1	–	-3	0	3	5
25	8	-10	8	–	-10	3	−30
26	-21	-20	-21	–	-18	63	4
27	1	1	–	-3	3	3	15
28	0	3	0	–	3	5	0
29	-8	10	-8	–	10	3	10
30	0	0	–	-1	1	1	3