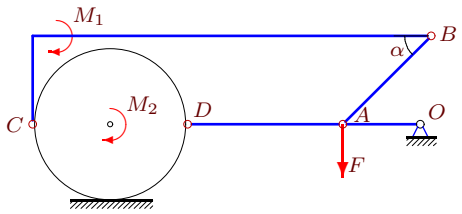
Принцип возможных перемещений (2)

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.

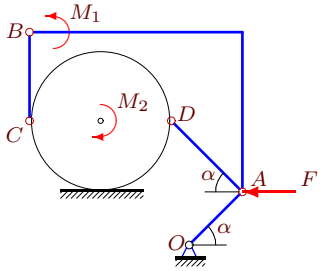
Кирсанов М.Н. **Решебник. Теоретическая механика**/Под ред. А. И. Кириллова.– М.:ФИЗМАТЛИТ, 2008.– 384 с. (с.158.)

Задача 34.1. //



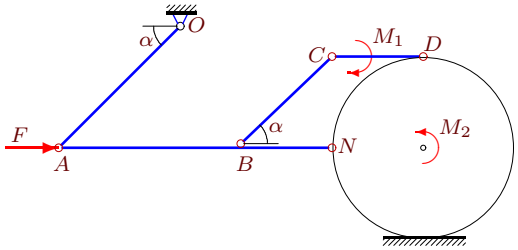
$M_1 = 140$, $M_2 = 169$, $R = 7$, $OA = 7$, $AB = 8\sqrt{2}$, $AD = 14$, $\alpha = 45°$.

Задача 34.2. //



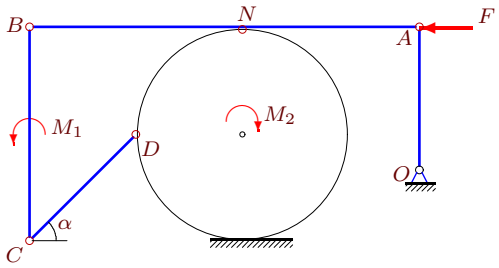
$M_1 = 285$, $M_2 = 170$, $R = 4$, $OA = 3\sqrt{2}$, $AD = 4\sqrt{2}$, $BC = 5$, $\alpha = 45°$.

Задача 34.3. //



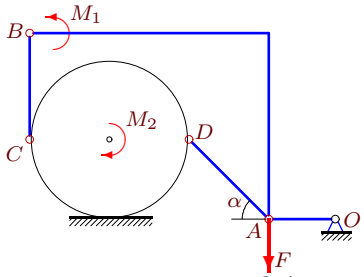
$M_1 = 300$, $M_2 = 352$, $R = 6$, $OA = 8\sqrt{2}$, $AB = 12$, $BN = 6$, $BC = 6\sqrt{2}$, $CD = 6$, α=45°

Задача 34.4. //



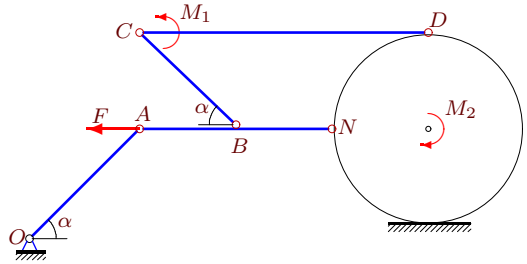
$M_1 = 454$, $M_2 = 600$, $R = 6$, $OA = 8$, $CD = 6\sqrt{2}$, $AN = 10$, $AB = 22$, $\alpha = 45°$.

Задача 34.5. //



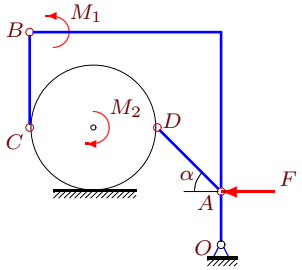
$M_1 = M_2 = 305$, $R = 6$, $OA = 5$, $AD = 6\sqrt{2}$, $BC = 8$, $\alpha = 45°$.

Задача 34.6. //



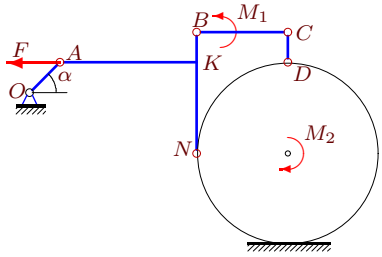
$M_1 = 648$, $M_2 = 1000$, $R = 7$, $OA = 8\sqrt{2}$, $AB = 7$, $BN = 7$, $BC = 7\sqrt{2}$, $CD = 21$, α=45°

Задача 34.7. //



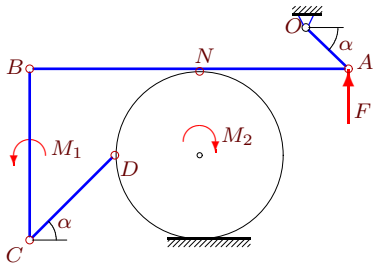
$M_1 = 495$, $M_2 = 525$, $R = 6$, $OA = 5$, $AD = 6\sqrt{2}$, $BC = 9$, $\alpha = 45°$.

Задача 34.8. //



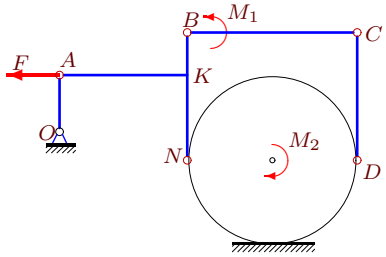
$M_1 = 7$, $M_2 = 31$, $R = 6$, $OA = 2\sqrt{2}$, $AK = 9$, $BK = 2$, $KN = 6$, $CD = 2$, $\alpha = 45°$.

Задача 34.9. II



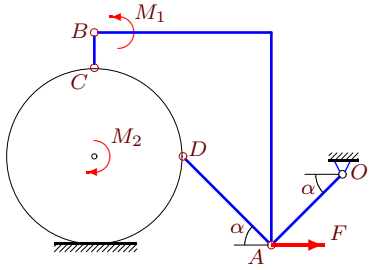
$M_1 = 343$, $M_2 = 552$, $R = 8$, $OA = 4\sqrt{2}$,
$CD = 8\sqrt{2}$, $AN = 14$, $AB = 30$, $\alpha = 45°$.

Задача 34.10. II



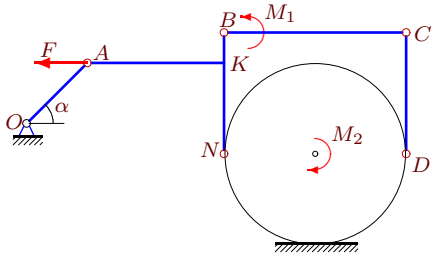
$M_1 = 30$, $M_2 = 66$, $R = 6$, $OA = 4$,
$AK = 9$, $BK = 3$, $KN = 6$, $CD = 9$.

Задача 34.11. II



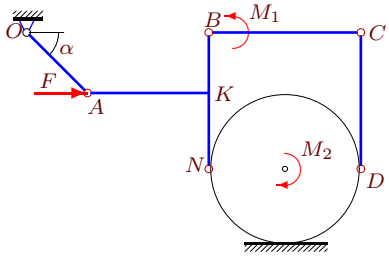
$M_1 = 84$, $M_2 = 82$, $R = 5$, $OA = 4\sqrt{2}$,
$AD = 5\sqrt{2}$, $BC = 2$, $\alpha = 45°$.

Задача 34.12. II



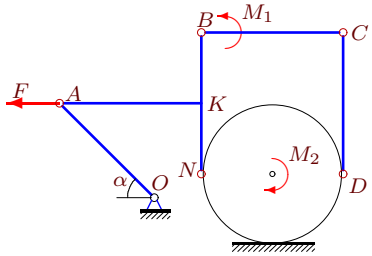
$M_1 = 50$, $M_2 = 62$, $R = 6$, $OA = 4\sqrt{2}$,
$AK = 9$, $BK = 2$, $KN = 6$, $CD = 8$, $\alpha = 45°$.

Задача 34.13. II



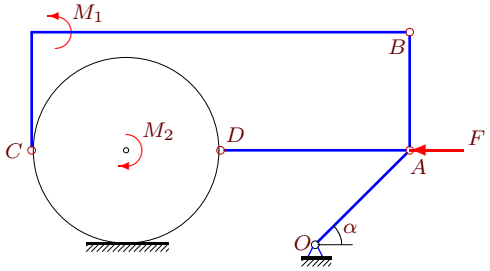
$M_1 = 84$, $M_2 = 104$, $R = 5$, $OA = 4\sqrt{2}$,
$AK = 8$, $BK = 4$, $KN = 5$, $CD = 9$, $\alpha = 45°$.

Задача 34.14. II



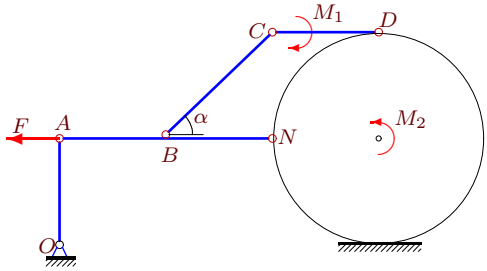
$M_1 = 44$, $M_2 = 32$, $R = 3$, $OA = 4\sqrt{2}$,
$AK = 6$, $BK = 3$, $KN = 3$, $CD = 6$, $\alpha = 45°$.

Задача 34.15. II



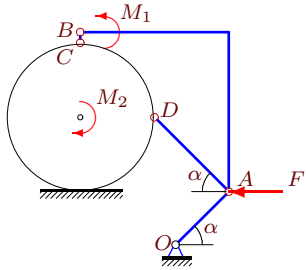
$M_1 = 14$, $M_2 = 23$, $R = 4$, $OA = 4\sqrt{2}$,
$AB = 5$, $AD = 8$, $\alpha = 45°$.

Задача 34.16. II



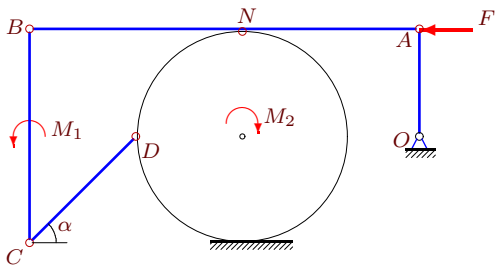
$M_1 = 58$, $M_2 = 61$, $R = 6$, $OA = 6$,
$AB = 6$, $BN = 6$, $BC = 6\sqrt{2}$, $CD = 6$, α=45°

Задача 34.17. II



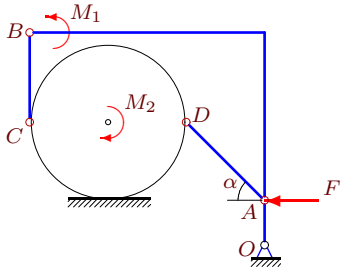
$M_1 = 130$, $M_2 = 415$, $R = 7$, $OA = 5\sqrt{2}$,
$AD = 7\sqrt{2}$, $BC = 1$, $\alpha = 45°$.

Задача 34.18. II



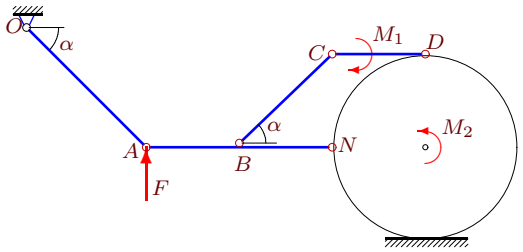
$M_1 = 299$, $M_2 = 600$, $R = 6$, $OA = 6$,
$CD = 6\sqrt{2}$, $AN = 10$, $AB = 22$, $\alpha = 45°$.

Задача 34.19. II



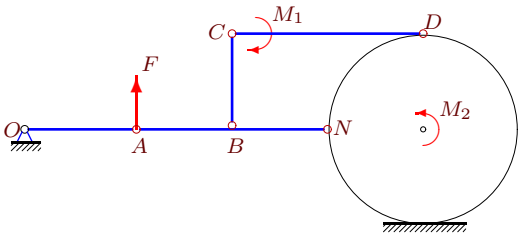
$M_1 = 162,\ M_2 = 502,\ R = 7,\ OA = 4,$
$AD = 7\sqrt{2},\ BC = 8,\ \alpha = 45°.$

Задача 34.20. II



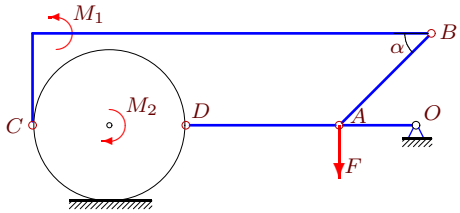
$M_1 = 324,\ M_2 = 378,\ R = 7,\ OA = 9\sqrt{2},$
$AB = 7,\ BN = 7,\ BC = 7\sqrt{2},\ CD = 7,\ \alpha$=45°

Задача 34.21. II



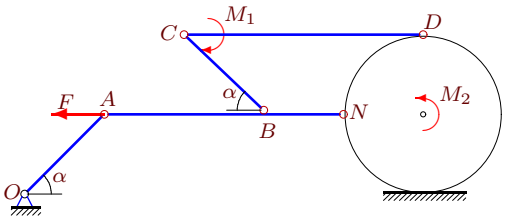
$M_1 = 840,\ M_2 = 847,\ R = 6,\ OA = 7,$
$AB = 6,\ BN = BC = 6,\ CD = 12.$

Задача 34.22. II



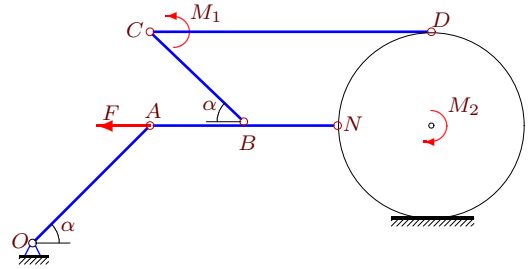
$M_1 = 100,\ M_2 = 81,\ R = 5,\ OA = 5,$
$AB = 6\sqrt{2},\ AD = 10,\ \alpha = 45°.$

Задача 34.23. II



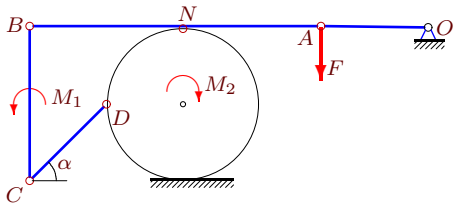
$M_1 = 63,\ M_2 = 104,\ R = 4,\ OA = 4\sqrt{2},$
$AB = 8,\ BN = 4,\ BC = 4\sqrt{2},\ CD = 12,\ \alpha$=45°

Задача 34.24. II



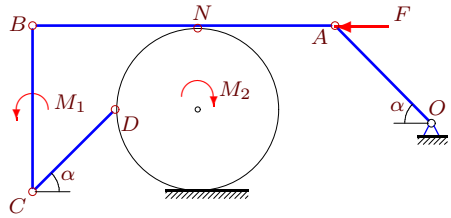
$M_1 = 165,\ M_2 = 175,\ R = 4,\ OA = 5\sqrt{2},$
$AB = 4,\ BN = 4,\ BC = 4\sqrt{2},\ CD = 12,\ \alpha$=45°

Задача 34.25. II



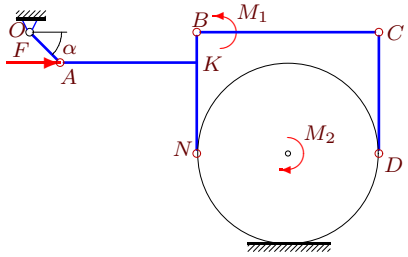
$M_1 = 315,\ M_2 = 574,\ R = 5,\ OA = 7,$
$CD = 5\sqrt{2},\ AN = 9,\ AB = 19,\ \alpha = 45°.$

Задача 34.26. II



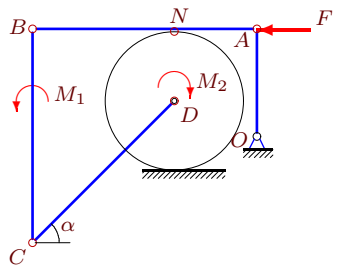
$M_1 = 385,\ M_2 = 462,\ R = 6,\ OA = 7\sqrt{2},$
$CD = 6\sqrt{2},\ AN = 10,\ AB = 22,\ \alpha = 45°.$

Задача 34.27. II



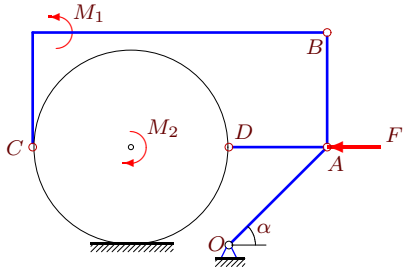
$M_1 = 25,\ M_2 = 37,\ R = 6,\ OA = 2\sqrt{2},$
$AK = 9,\ BK = 2,\ KN = 6,\ CD = 8,\ \alpha = 45°.$

Задача 34.28. II



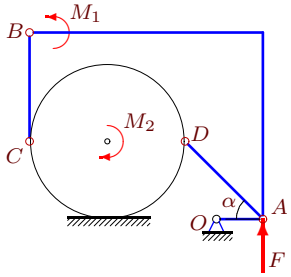
$M_1 = 285,\ M_2 = 143,\ R = 6,\ OA = 9,$
$CD = 12\sqrt{2},\ AN = 7,\ AB = 19,\ \alpha = 45°.$

Задача 34.29. *II*



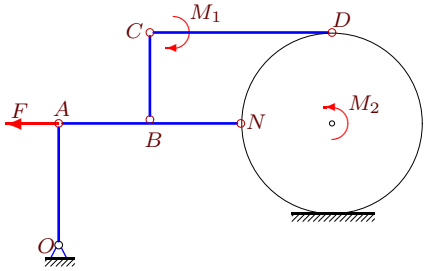
$M_1 = 33$, $M_2 = 88$, $R = 6$, $OA = 6\sqrt{2}$,
$AB = 7$, $AD = 6$, $\alpha = 45°$.

Задача 34.30. *II*



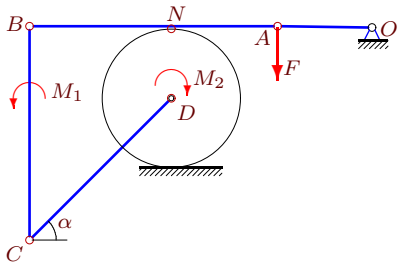
$M_1 = 87$, $M_2 = 117$, $R = 5$, $OA = 3$,
$AD = 5\sqrt{2}$, $BC = 7$, $\alpha = 45°$.

Задача 34.31. *II*



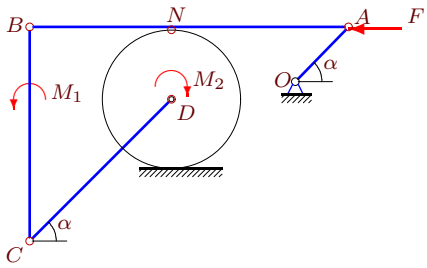
$M_1 = 92$, $M_2 = 119$, $R = 6$, $OA = 8$,
$AB = 6$, $BN = BC = 6$, $CD = 12$.

Задача 34.32. *II*



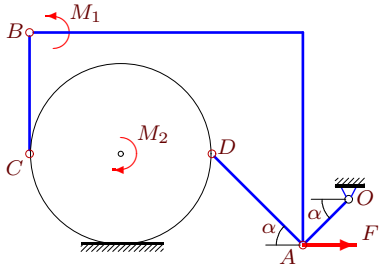
$M_1 = 216$, $M_2 = 448$, $R = 6$, $OA = 8$,
$CD = 12\sqrt{2}$, $AN = 9$, $AB = 21$, $\alpha = 45°$.

Задача 34.33. *II*



$M_1 = 465$, $M_2 = 227$, $R = 8$, $OA = 6\sqrt{2}$,
$CD = 16\sqrt{2}$, $AN = 20$, $AB = 36$, $\alpha = 45°$.

Задача 34.34. *II*



$M_1 = 78$, $M_2 = 184$, $R = 6$, $OA = 3\sqrt{2}$,
$AD = 6\sqrt{2}$, $BC = 8$, $\alpha = 45°$.

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	-1	-1	–	-2	0	4	5
2	10	18	–	0	15	20	−5
3	8	-12	8	–	-12	9	92
4	0	0	-2	–	2	3	50
5	-5	-5	–	-5	-5	12	0
6	-24	24	8	–	24	21	−112
7	15	55	–	-45	45	108	30
8	-4	5	-31	–	5	3	20
9	8	8	23	–	-7	28	−59
10	-4	6	-4	–	6	3	18
11	-2	-2	–	0	-4	5	−8
12	-8	10	-8	–	10	3	10
13	0	-4	0	–	-4	5	−4
14	0	4	0	–	4	3	−4
15	1	1	–	0	2	2	4
16	-1	2	-1	–	2	2	−15
17	5	5	–	0	10	14	50
18	0	0	-1	–	1	2	50
19	2	9	–	-6	6	21	32
20	0	-9	0	–	-9	7	54
21	-14	0	-7	–	0	24	−35
22	-1	-1	–	-2	0	4	5
23	-6	9	4	–	9	9	−19
24	-15	15	5	–	15	12	−30
25	-7	-7	-14	–	0	9	35
26	-42	-42	-119	–	35	60	77
27	0	-1	0	–	-1	3	−2
28	0	1	0	–	3	4	4
29	2	2	–	0	3	3	11
30	3	3	–	3	3	10	3
31	-2	4	1	–	4	3	−16
32	-24	-16	-24	–	0	27	16
33	12	13	12	–	15	40	−11
34	-4	-7	–	0	-6	12	−22