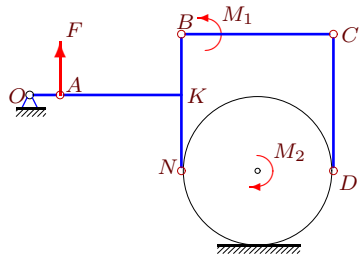
Принцип возможных перемещений (2)

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.

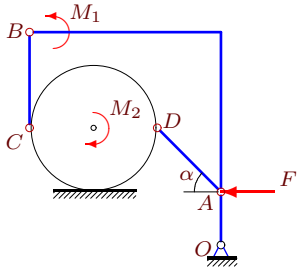
Кирсанов М.Н. **Решебник. Теоретическая механика**/Под ред. А. И. Кириллова.– М.:ФИЗМАТЛИТ, 2008.– 384 с. (с.158.)

Задача 34.1. *10*



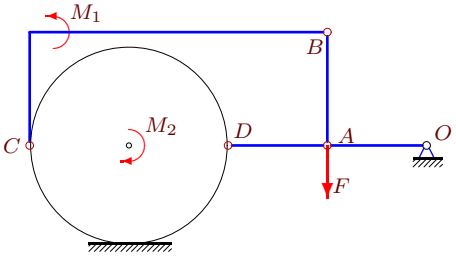
$M_1 = 16$, $M_2 = 28$, $R = 5$, $OA = 2$, $AK = 8$, $BK = 4$, $KN = 5$, $CD = 9$.

Задача 34.2. *10*



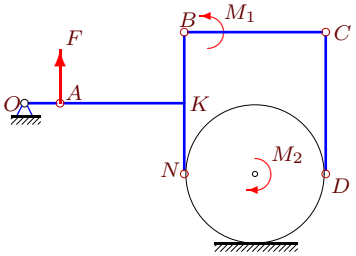
$M_1 = 495$, $M_2 = 525$, $R = 6$, $OA = 5$, $AD = 6\sqrt{2}$, $BC = 9$, $\alpha = 45°$.

Задача 34.3. *10*



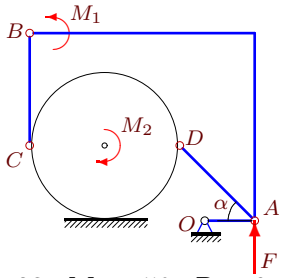
$M_1 = 105$, $M_2 = 127$, $R = 7$, $OA = 7$, $AB = 8$, $AD = 7$.

Задача 34.4. *10*



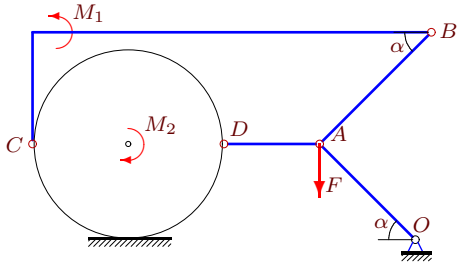
$M_1 = 10$, $M_2 = 22$, $R = 4$, $OA = 2$, $AK = 7$, $BK = 4$, $KN = 4$, $CD = 8$.

Задача 34.5. *10*



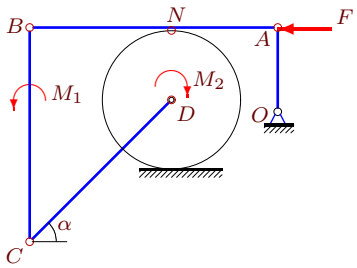
$M_1 = 23$, $M_2 = 59$, $R = 6$, $OA = 4$, $AD = 6\sqrt{2}$, $BC = 9$, $\alpha = 45°$.

Задача 34.6. *10*



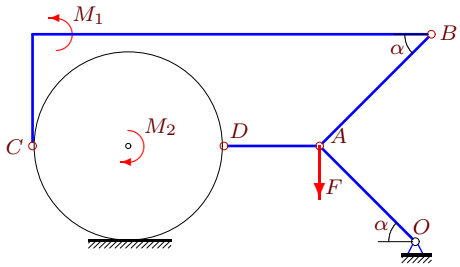
$M_1 = 23$, $M_2 = 30$, $R = 6$, $OA = 6\sqrt{2}$, $AB = 7\sqrt{2}$, $AD = 6$, $\alpha = 45°$.

Задача 34.7. *10*



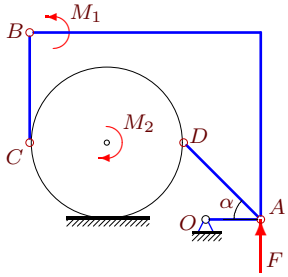
$M_1 = 483$, $M_2 = 497$, $R = 6$, $OA = 7$, $CD = 12\sqrt{2}$, $AN = 9$, $AB = 21$, $\alpha = 45°$.

Задача 34.8. *10*



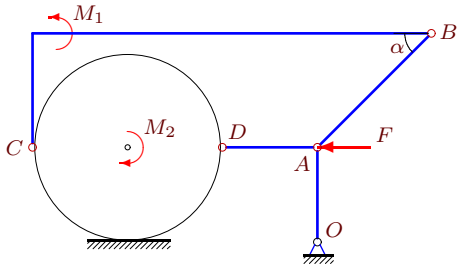
$M_1 = 23$, $M_2 = 30$, $R = 6$, $OA = 6\sqrt{2}$, $AB = 7\sqrt{2}$, $AD = 6$, $\alpha = 45°$.

Задача 34.9. 10



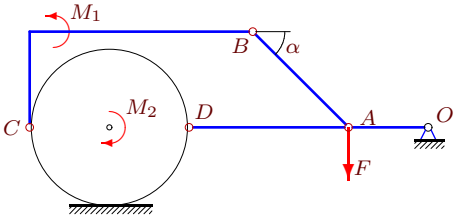
$M_1 = 205$, $M_2 = 415$, $R = 7$, $OA = 5$,
$AD = 7\sqrt{2}$, $BC = 10$, $\alpha = 45°$.

Задача 34.10. 10



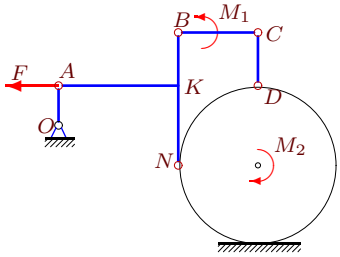
$M_1 = 42$, $M_2 = 59$, $R = 5$, $OA = 5$,
$AB = 6\sqrt{2}$, $AD = 5$, $\alpha = 45°$.

Задача 34.11. 10



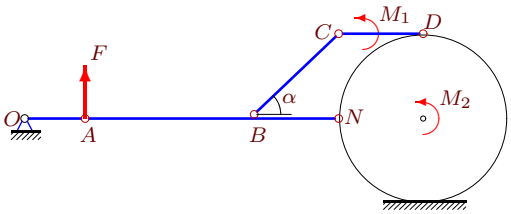
$M_1 = 100$, $M_2 = 81$, $R = 5$, $OA = 5$,
$AB = 6\sqrt{2}$, $AD = 10$, $\alpha = 45°$.

Задача 34.12. 10



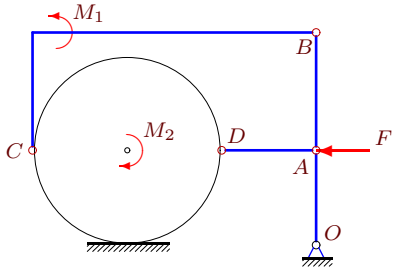
$M_1 = 54$, $M_2 = 66$, $R = 6$, $OA = 3$,
$AK = 9$, $BK = 4$, $KN = 6$, $CD = 4$.

Задача 34.13. 10



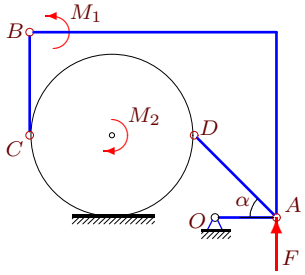
$M_1 = 420$, $M_2 = 635$, $R = 7$, $OA = 5$,
$AB = 14$, $BN = 7$, $BC = 7\sqrt{2}$, $CD = 7$, α=45°

Задача 34.14. 10



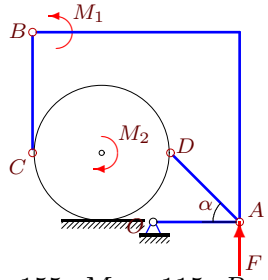
$M_1 = 33$, $M_2 = 35$, $R = 4$, $OA = 4$,
$AB = 5$, $AD = 4$.

Задача 34.15. 10



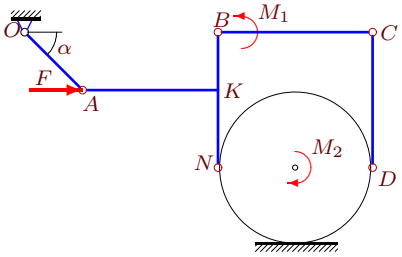
$M_1 = M_2 = 69$, $R = 4$, $OA = 3$,
$AD = 4\sqrt{2}$, $BC = 5$, $\alpha = 45°$.

Задача 34.16. 10



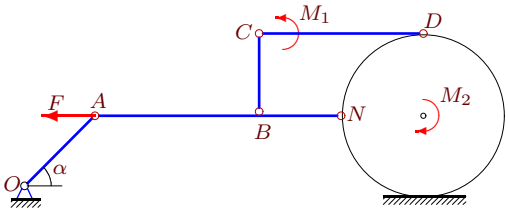
$M_1 = 155$, $M_2 = 115$, $R = 4$, $OA = 5$,
$AD = 4\sqrt{2}$, $BC = 7$, $\alpha = 45°$.

Задача 34.17. 10



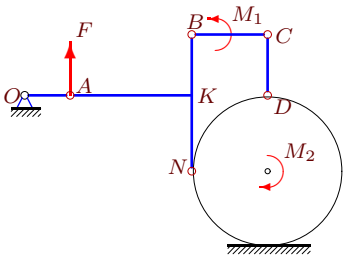
$M_1 = M_2 = 51$, $R = 4$, $OA = 3\sqrt{2}$,
$AK = 7$, $BK = 3$, $KN = 4$, $CD = 7$, $\alpha = 45°$.

Задача 34.18. 10



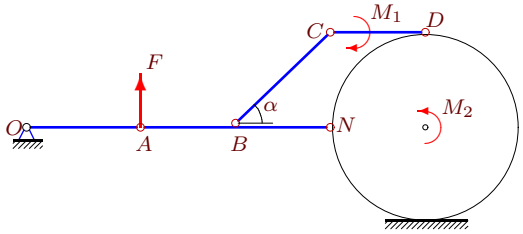
$M_1 = 204$, $M_2 = 251$, $R = 7$, $OA = 6\sqrt{2}$,
$AB = 14$, $BN = BC = 7$, $CD = 14$, α=45°

Задача 34.19. 10



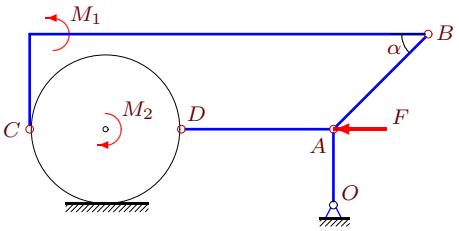
$M_1 = 10,\ M_2 = 28,\ R = 5,\ OA = 3,$
$AK = 8,\ BK = 4,\ KN = 5,\ CD = 4.$

Задача 34.20. 10



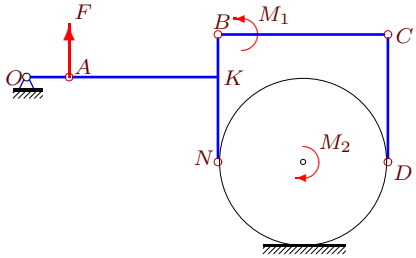
$M_1 = 60,\ M_2 = 123,\ R = 5,\ OA = 6,$
$AB = 5,\ BN = 5,\ BC = 5\sqrt{2},\ CD = 5,\ \alpha$=45°

Задача 34.21. 10



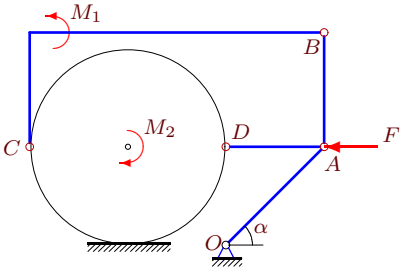
$M_1 = 44,\ M_2 = 47,\ R = 4,\ OA = 4,$
$AB = 5\sqrt{2},\ AD = 8,\ \alpha = 45°.$

Задача 34.22. 10



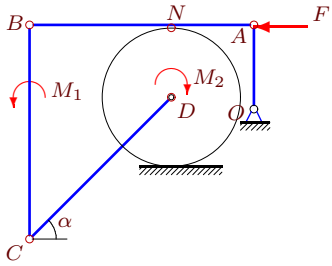
$M_1 = 10,\ M_2 = 22,\ R = 4,\ OA = 2,$
$AK = 7,\ BK = 2,\ KN = 4,\ CD = 6.$

Задача 34.23. 10



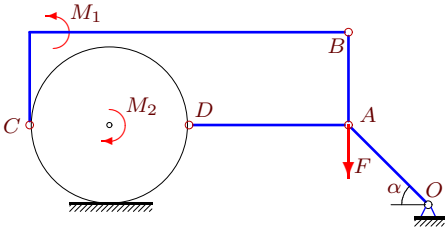
$M_1 = 33,\ M_2 = 88,\ R = 6,\ OA = 6\sqrt{2},$
$AB = 7,\ AD = 6,\ \alpha = 45°.$

Задача 34.24. 10



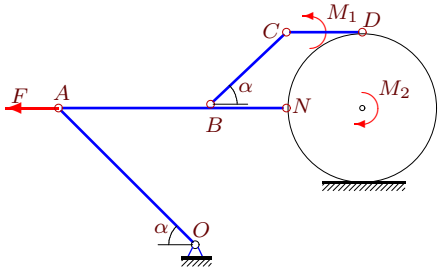
$M_1 = 483,\ M_2 = 245,\ R = 6,\ OA = 7,$
$CD = 12\sqrt{2},\ AN = 7,\ AB = 19,\ \alpha = 45°.$

Задача 34.25. 10



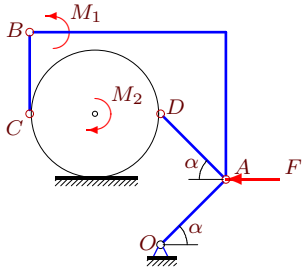
$M_1 = 23,\ M_2 = 30,\ R = 6,\ OA = 6\sqrt{2},$
$AB = 7,\ AD = 12,\ \alpha = 45°.$

Задача 34.26. 10



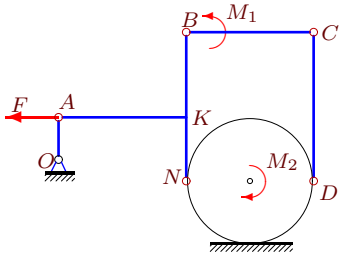
$M_1 = 216,\ M_2 = 180,\ R = 5,\ OA = 9\sqrt{2},$
$AB = 10,\ BN = 5,\ BC = 5\sqrt{2},\ CD = 5,\ \alpha$=45°

Задача 34.27. 10



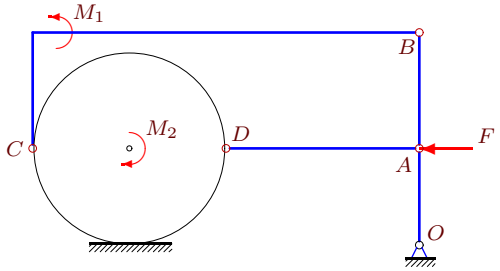
$M_1 = 225,\ M_2 = 170,\ R = 4,\ OA = 4\sqrt{2},$
$AD = 4\sqrt{2},\ BC = 5,\ \alpha = 45°.$

Задача 34.28. 10



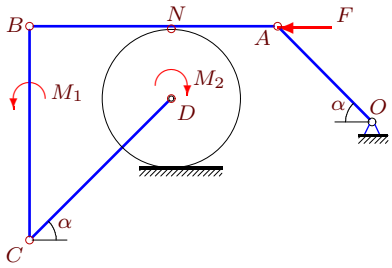
$M_1 = 8,\ M_2 = 14,\ R = 3,\ OA = 2,$
$AK = 6,\ BK = 4,\ KN = 3,\ CD = 7.$

Задача 34.29. *10*



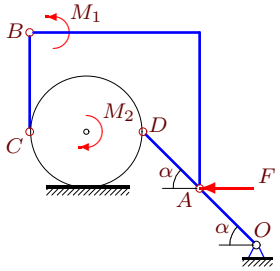
$M_1 = 56$, $M_2 = 79$, $R = 5$, $OA = 5$,
$AB = 6$, $AD = 10$.

Задача 34.30. *10*



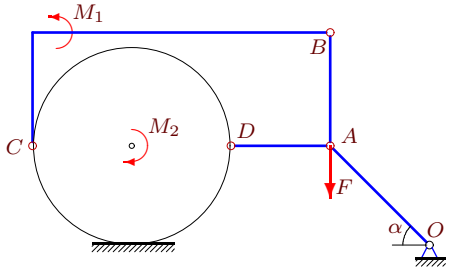
$M_1 = 198$, $M_2 = 442$, $R = 6$, $OA = 8\sqrt{2}$,
$CD = 12\sqrt{2}$, $AN = 9$, $AB = 21$, $\alpha = 45°$.

Задача 34.31. *10*



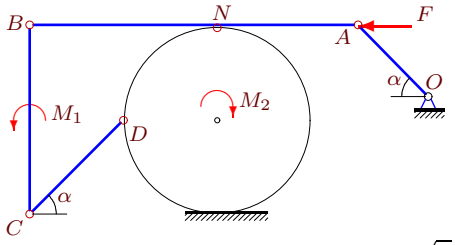
$M_1 = 420$, $M_2 = 259$, $R = 4$, $OA = 4\sqrt{2}$,
$AD = 4\sqrt{2}$, $BC = 7$, $\alpha = 45°$.

Задача 34.32. *10*



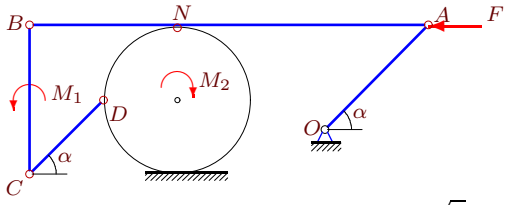
$M_1 = 27$, $M_2 = 42$, $R = 7$, $OA = 7\sqrt{2}$,
$AB = 8$, $AD = 7$, $\alpha = 45°$.

Задача 34.33. *10*



$M_1 = 429$, $M_2 = 580$, $R = 8$, $OA = 6\sqrt{2}$,
$CD = 8\sqrt{2}$, $AN = 12$, $AB = 28$, $\alpha = 45°$.

Задача 34.34. *10*



$M_1 = 119$, $M_2 = 1120$, $R = 5$, $OA = 7\sqrt{2}$,
$CD = 5\sqrt{2}$, $AN = 17$, $AB = 27$, $\alpha = 45°$.

34.10

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	-2	2	-2	–	2	3	4
2	15	55	–	-45	45	108	30
3	-1	-1	–	-3	0	3	5
4	-2	2	-2	–	2	3	4
5	1	1	–	1	1	3	3
6	0	0	–	-2	1	1	5
7	0	7	0	–	21	36	28
8	0	0	–	-2	1	1	5
9	5	5	–	5	5	14	15
10	1	1	–	-3	3	3	9
11	-1	-1	–	-2	0	4	5
12	-4	6	-19	–	6	4	6
13	-5	0	-5	–	0	21	−20
14	1	1	–	-3	3	3	6
15	3	3	–	3	3	8	0
16	5	5	–	5	5	8	−5
17	0	-3	0	–	-3	4	0
18	-4	6	1	–	6	7	−31
19	-2	2	-7	–	2	2	6
20	-3	0	-3	–	0	5	−6
21	1	1	–	-2	4	4	9
22	-2	2	-2	–	2	3	4
23	2	2	–	0	3	3	11
24	0	7	0	–	21	36	7
25	0	0	–	-1	1	1	5
26	0	9	0	–	9	5	−36
27	10	18	–	0	15	15	5
28	-2	4	-2	–	4	3	4
29	1	1	–	-2	4	4	13
30	-24	-10	-24	–	18	27	46
31	-7	1	–	-21	0	21	35
32	0	0	–	-2	1	1	6
33	-4	-4	-11	–	3	8	72
34	70	70	21	–	119	170	119