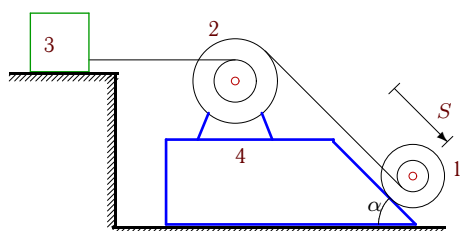


Теорема о центре масс системы

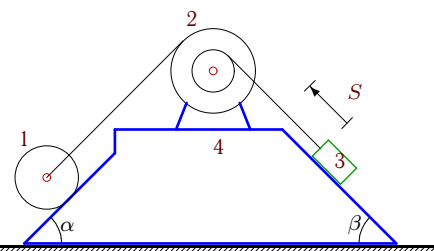
Механизм, состоящий из трех тел, установлен на призме, скользящей по гладкой плоскости. Нити, соединяющие тела, параллельны плоскостям. Под действием внутренних сил из состояния покоя механизм пришел в движение. Центр цилиндра (блока) или бруска сместился относительно призмы на расстояние S . Найти смещение призмы. Массы даны в килограммах, радиусы и смещение — в сантиметрах.

1



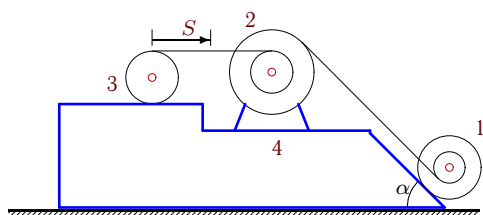
$$R_1 = 5, r_1 = 3, R_2 = 5, r_2 = 3, m_1 = 5, m_2 = 15, m_3 = 50, m_4 = 12, S = 328, \cos \alpha = 0,8.$$

2



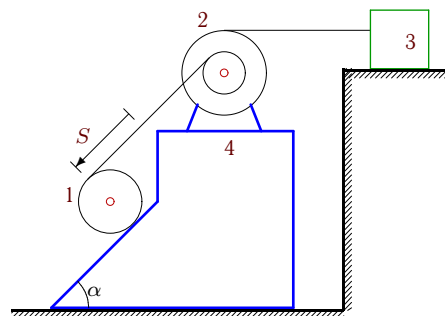
$$R_2 = 5, r_2 = 3, m_1 = 2, m_2 = 10, m_3 = 4, m_4 = 15, S = 62, \cos \alpha = 0,6, \beta = \pi/3.$$

3.



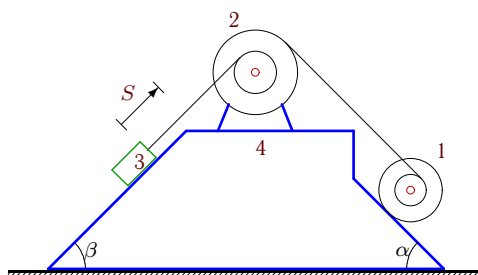
$$R_1 = 5, r_1 = 3, R_2 = 4, r_2 = 2, m_1 = 1, m_2 = 12, m_3 = 10, m_4 = 15, S = 152, \cos \alpha = 0,8.$$

4.



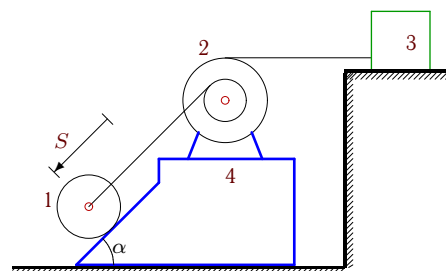
$$R_2 = 4, r_2 = 3, m_1 = 4, m_2 = 10, m_3 = 6, m_4 = 10, S = 60, \alpha = \pi/3.$$

5.



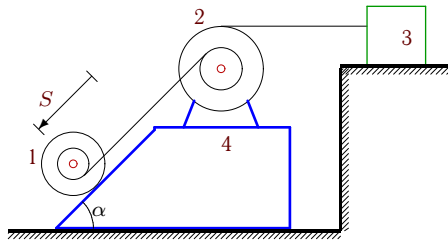
$$R_1 = 5, r_1 = 3, R_2 = 3, r_2 = 2, m_1 = 8, m_2 = 12, m_3 = 2, m_4 = 13, S = 105, \cos \alpha = 0,8, \beta = \pi/3.$$

6.



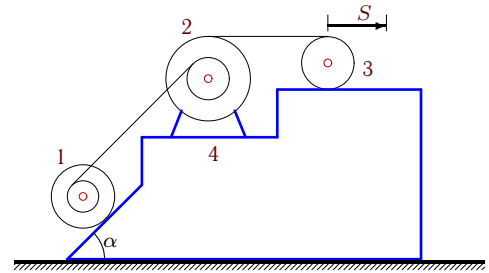
$$R_2 = 4, r_2 = 3, m_1 = 2, m_2 = 10, m_3 = 6, m_4 = 10, S = 28, \alpha = \pi/3.$$

7.



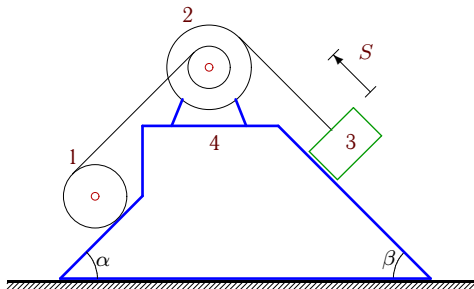
$$R_1 = 5, r_1 = 3, R_2 = 5, r_2 = 3, m_1 = 5, m_2 = 15, m_3 = 3, m_4 = 12, S = 105, \cos \alpha = 0,6.$$

8.



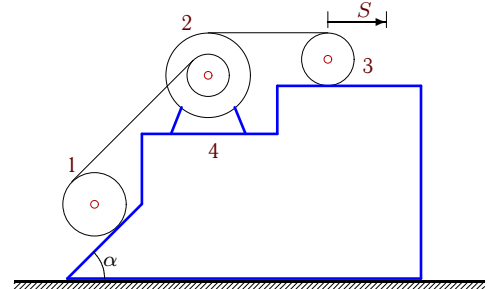
$$R_1 = 3, r_1 = 2, R_2 = 3, r_2 = 2, m_1 = 5, m_2 = 13, m_3 = 10, m_4 = 10, S = 38, \alpha = \pi/3.$$

9.



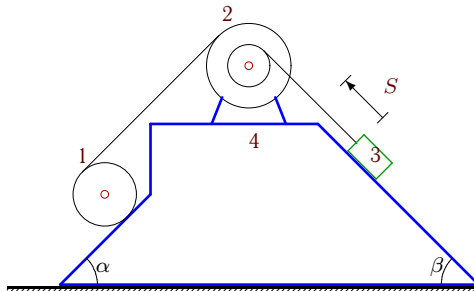
$$R_2 = 4, r_2 = 3, m_1 = 32, m_2 = 15, m_3 = 6, m_4 = 10, S = 252, \alpha = \pi/3, \beta = \pi/3.$$

10.



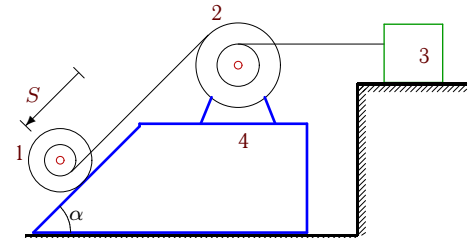
$$R_2 = 3, r_2 = 2, m_1 = 3, m_2 = 13, m_3 = 10, m_4 = 13, S = 78, \alpha = \pi/3.$$

11.



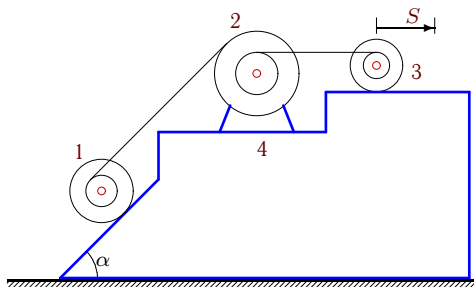
$$R_2 = 4, r_2 = 3, m_1 = 5, m_2 = 12, m_3 = 4, m_4 = 13, S = 102, \cos \alpha = 0,6, \beta = \pi/3.$$

12.



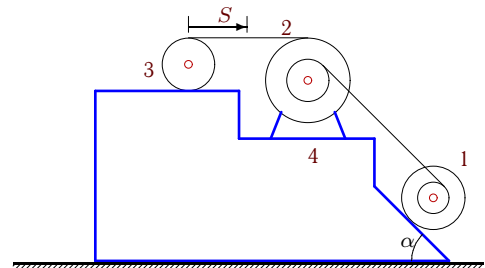
$$R_1 = 3, r_1 = 2, R_2 = 3, r_2 = 2, m_1 = 10, m_2 = 13, m_3 = 9, m_4 = 10, S = 84, \cos \alpha = 0,6.$$

13.



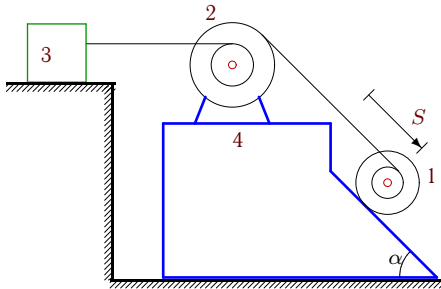
$$R_1 = 5, r_1 = 3, R_2 = 3, r_2 = 2, R_3 = 5, r_3 = 3, m_1 = 4, m_2 = 15, m_3 = 10, m_4 = 13, S = 126, \alpha = \pi/3.$$

14.



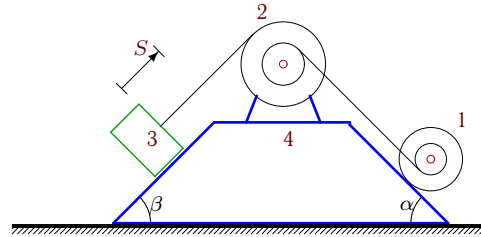
$$R_1 = 3, r_1 = 2, R_2 = 4, r_2 = 3, m_1 = 25, m_2 = 10, m_3 = 15, m_4 = 13, S = 126, \cos \alpha = 0,8.$$

15.



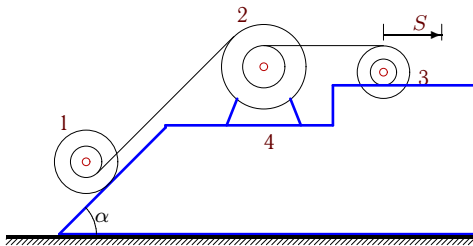
$$R_1 = 3, r_1 = 2, R_2 = 3, r_2 = 2, m_1 = 10, m_2 = 13, m_3 = 18, m_4 = 10, S = 51, \cos \alpha = 0,8.$$

16.



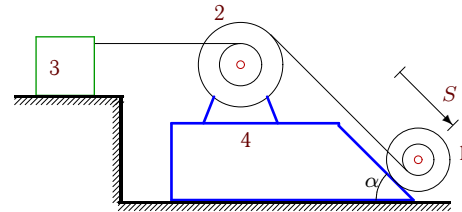
$$R_1 = 5, r_1 = 3, R_2 = 4, r_2 = 3, m_1 = 4, m_2 = 15, m_3 = 15, m_4 = 10, S = 176, \cos \alpha = 0,8, \cos \beta = 0,6.$$

17.



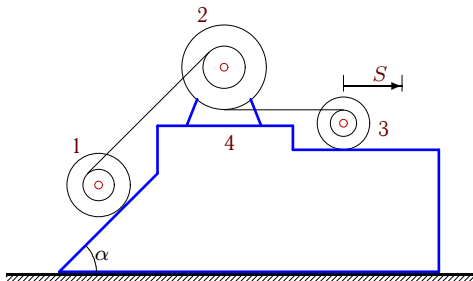
$$R_1 = 4, r_1 = 3, R_2 = 4, r_2 = 3, R_3 = 4, r_3 = 3, m_1 = 15, m_2 = 13, m_3 = 15, m_4 = 10, S = 106, \cos \alpha = 0,6.$$

18.



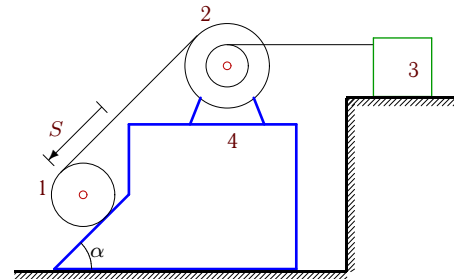
$$R_1 = 5, r_1 = 3, R_2 = 4, r_2 = 2, m_1 = 10, m_2 = 15, m_3 = 10, m_4 = 12, S = 188, \cos \alpha = 0,8.$$

19.



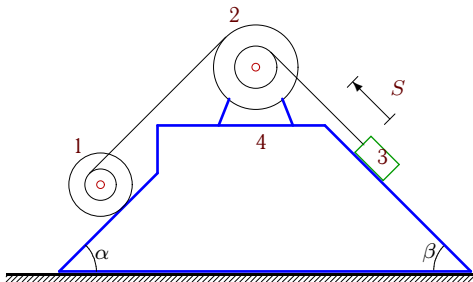
$$R_1 = 5, r_1 = 3, R_2 = 4, r_2 = 3, R_3 = 4, r_3 = 2, m_1 = 64, m_2 = 12, m_3 = 15, m_4 = 10, S = 303, \cos \alpha = 0,6.$$

20.



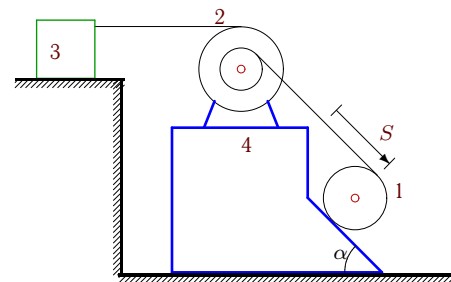
$$R_2 = 5, r_2 = 3, m_1 = 2, m_2 = 15, m_3 = 10, m_4 = 12, S = 78, \alpha = \pi/3.$$

21.



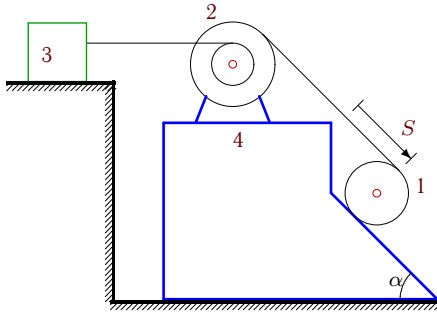
$$R_1 = 4, r_1 = 2, R_2 = 4, r_2 = 2, m_1 = 6, m_2 = 12, m_3 = 5, m_4 = 15, S = 76, \alpha = \pi/3, \cos \beta = 0,6.$$

22.



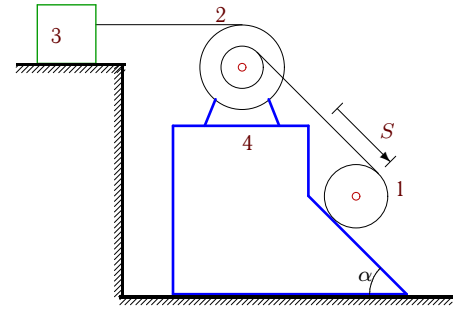
$$R_2 = 4, r_2 = 3, m_1 = 10, m_2 = 12, m_3 = 3, m_4 = 10, S = 140, \cos \alpha = 0,8.$$

23.



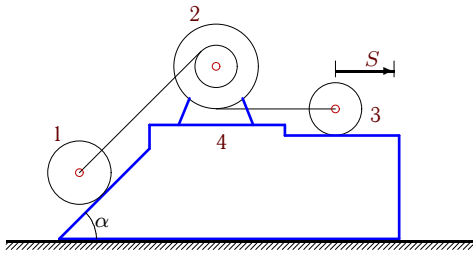
$$R_2 = 5, \quad r_2 = 3, \quad m_1 = 5, \quad m_2 = 15, \quad m_3 = 10, \\ m_4 = 12, \quad S = 126, \quad \cos \alpha = 0,8.$$

24.



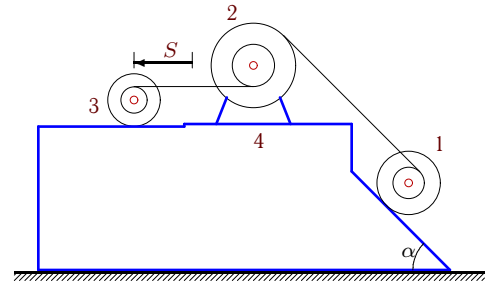
$$R_2 = 5, \quad r_2 = 3, \quad m_1 = 10, \quad m_2 = 10, \quad m_3 = 6, \\ m_4 = 12, \quad S = 114, \quad \cos \alpha = 0,8.$$

25.



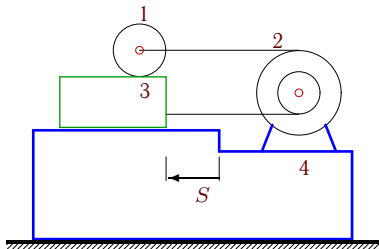
$$R_2 = 3, \quad r_2 = 2, \quad m_1 = 5, \quad m_2 = 15, \quad m_3 = 13, \\ m_4 = 10, \quad S = 129, \quad \cos \alpha = 0,6.$$

26.



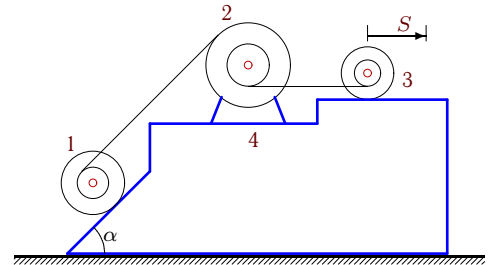
$$R_1 = 4, \quad r_1 = 2, \quad R_2 = 3, \quad r_2 = 2, \quad R_3 = 3, \quad r_3 = 2, \\ m_1 = 3, \quad m_2 = 12, \quad m_3 = 10, \quad m_4 = 13, \quad S = 114, \\ \cos \alpha = 0,8.$$

27.



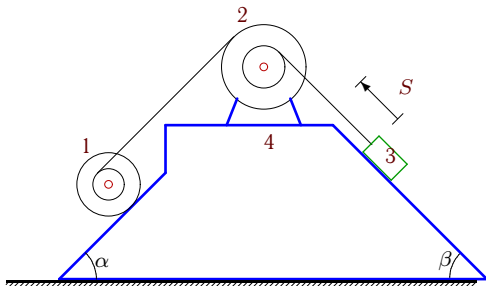
$$R_2 = 5, \quad r_2 = 3, \quad m_1 = 3, \quad m_2 = 12, \quad m_3 = 12, \\ m_4 = 12, \quad S = 117.$$

28.



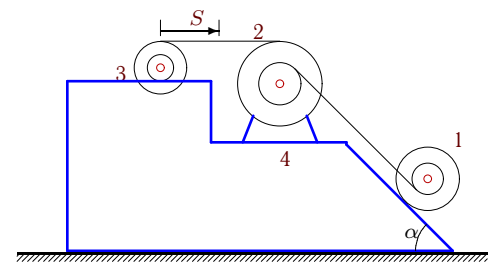
$$R_1 = 4, \quad r_1 = 2, \quad R_2 = 4, \quad r_2 = 3, \quad R_3 = 5, \quad r_3 = 3, \\ m_1 = 45, \quad m_2 = 15, \quad m_3 = 12, \quad m_4 = 13, \quad S = 170, \\ \alpha = \pi/3.$$

29.



$$R_1 = 4, \quad r_1 = 3, \quad R_2 = 3, \quad r_2 = 2, \quad m_1 = 14, \quad m_2 = 10, \\ m_3 = 5, \quad m_4 = 13, \quad S = 84, \quad \alpha = \pi/3, \quad \cos \beta = 0,8.$$

30.



$$R_1 = 3, \quad r_1 = 2, \quad R_2 = 4, \quad r_2 = 2, \quad R_3 = 4, \quad r_3 = 2, \\ m_1 = 5, \quad m_2 = 13, \quad m_3 = 13, \quad m_4 = 15, \quad S = 92, \\ \cos \alpha = 0,8.$$

Ответы.

Теорема о центре масс системы

№	Δ_4
1	64
2	8
3	72
4	36
5	21
6	9
7	15
8	12
9	36
10	22
11	12
12	16
13	39
14	66
15	28
16	60
17	254
18	40
19	36
20	26
21	14
22	64
23	48
24	84
25	33
26	18
27	21
28	8
29	20
30	62