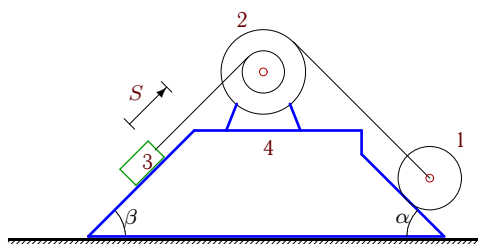


Теорема о центре масс системы

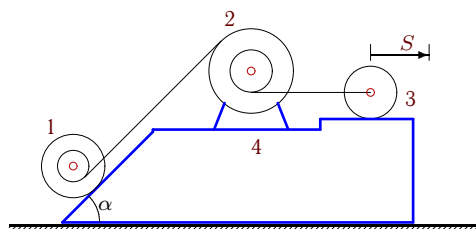
Механизм, состоящий из трех тел, установлен на призме, скользящей по гладкой плоскости. Нити, соединяющие тела, параллельны плоскостям. Под действием внутренних сил из состояния покоя механизм пришел в движение. Центр цилиндра (блока) или бруска сместился относительно призмы на расстояние S . Найти смещение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

1



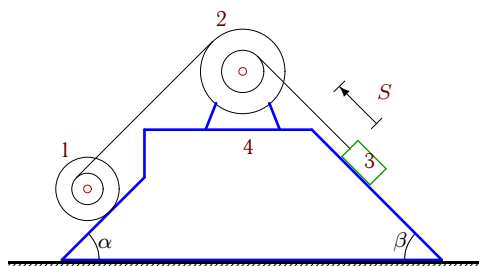
$$R_2 = 4, \quad r_2 = 3, \quad m_1 = 15, \quad m_2 = 10, \quad m_3 = 4, \\ m_4 = 13, \quad S = 126, \quad \cos \alpha = 0,8, \quad \beta = \pi/3.$$

2



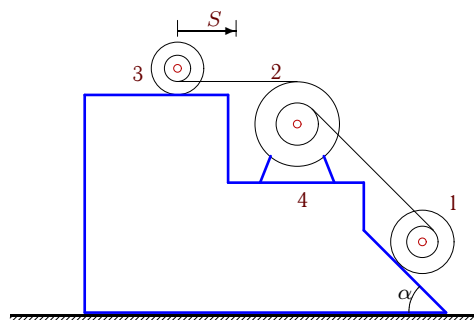
$$R_1 = 5, \quad r_1 = 3, \quad R_2 = 4, \quad r_2 = 2, \quad m_1 = 1, \quad m_2 = 12, \\ m_3 = 10, \quad m_4 = 12, \quad S = 105, \quad \cos \alpha = 0,6.$$

3



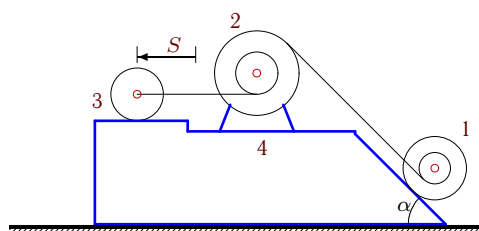
$$R_1 = 3, \quad r_1 = 2, \quad R_2 = 4, \quad r_2 = 3, \quad m_1 = 5, \quad m_2 = 10, \\ m_3 = 6, \quad m_4 = 10, \quad S = 62, \quad \alpha = \pi/3, \quad \beta = \pi/3.$$

4



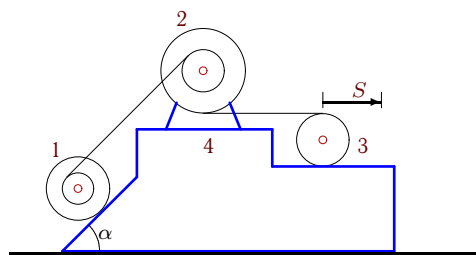
$$R_1 = 5, \quad r_1 = 3, \quad R_2 = 3, \quad r_2 = 2, \quad R_3 = 3, \quad r_3 = 2, \\ m_1 = 9, \quad m_2 = 15, \quad m_3 = 13, \quad m_4 = 10, \quad S = 188, \\ \cos \alpha = 0,8.$$

5



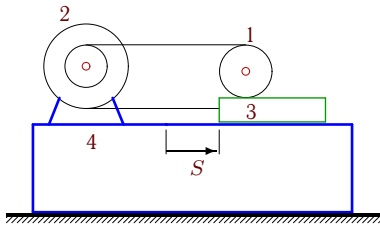
$$R_1 = 3, \quad r_1 = 2, \quad R_2 = 3, \quad r_2 = 2, \quad m_1 = 5, \quad m_2 = 13, \\ m_3 = 13, \quad m_4 = 13, \quad S = 88, \quad \cos \alpha = 0,8.$$

6



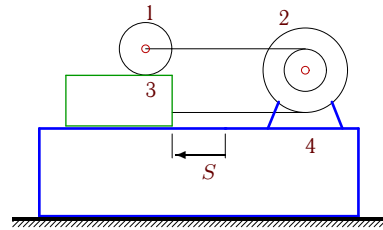
$$R_1 = 4, \quad r_1 = 2, \quad R_2 = 4, \quad r_2 = 2, \quad m_1 = 3, \quad m_2 = 12, \\ m_3 = 10, \quad m_4 = 12, \quad S = 74, \quad \alpha = \pi/3.$$

7



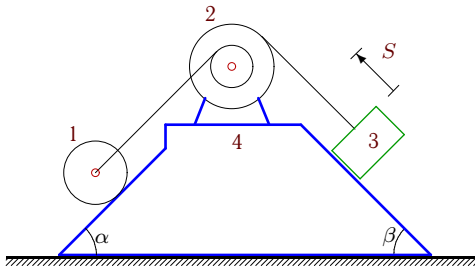
$$R_2 = 3, \quad r_2 = 2, \quad m_1 = 6, \quad m_2 = 10, \quad m_3 = 13, \\ m_4 = 13, \quad S = 42.$$

8



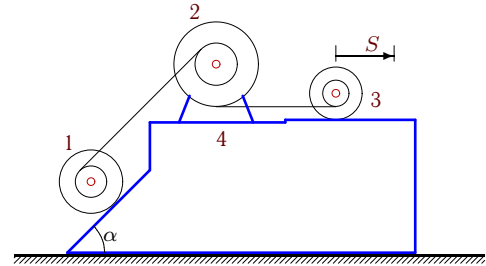
$$R_2 = 4, \quad r_2 = 2, \quad m_1 = 4, \quad m_2 = 15, \quad m_3 = 13, \\ m_4 = 15, \quad S = 141.$$

9



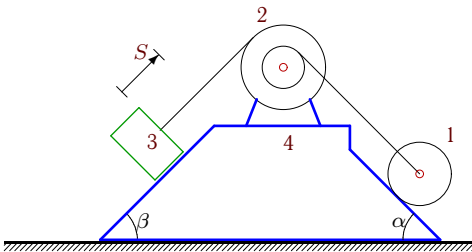
$$R_2 = 4, \quad r_2 = 2, \quad m_1 = 8, \quad m_2 = 15, \quad m_3 = 15, \\ m_4 = 15, \quad S = 159, \quad \alpha = \pi/3, \quad \cos \beta = 0,8.$$

10



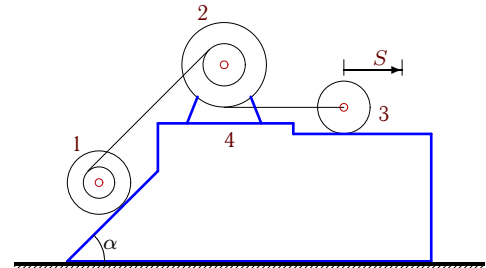
$$R_1 = 4, \quad r_1 = 3, \quad R_2 = 3, \quad r_2 = 2, \quad R_3 = 4, \quad r_3 = 2, \\ m_1 = 35, \quad m_2 = 13, \quad m_3 = 10, \quad m_4 = 13, \quad S = 142, \\ \cos \alpha = 0,6.$$

11



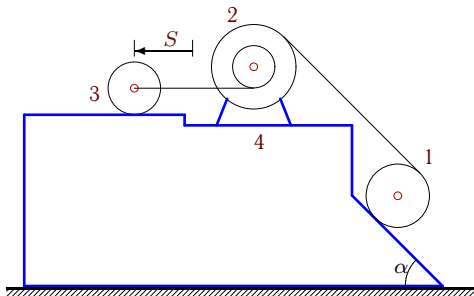
$$R_2 = 4, \quad r_2 = 3, \quad m_1 = 10, \quad m_2 = 13, \quad m_3 = 4, \\ m_4 = 10, \quad S = 37, \quad \cos \alpha = 0,8, \quad \beta = \pi/3.$$

12



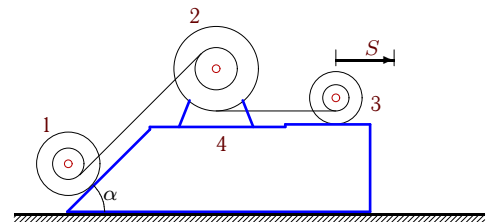
$$R_1 = 4, \quad r_1 = 2, \quad R_2 = 4, \quad r_2 = 3, \quad m_1 = 10, \quad m_2 = 12, \\ m_3 = 12, \quad m_4 = 13, \quad S = 141, \quad \cos \alpha = 0,6.$$

13



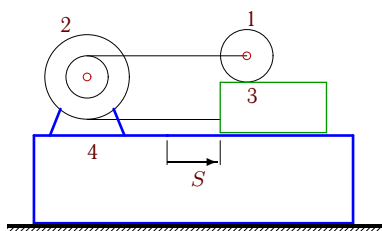
$$R_2 = 4, \quad r_2 = 2, \quad m_1 = 5, \quad m_2 = 15, \quad m_3 = 13, \\ m_4 = 15, \quad S = 144, \quad \cos \alpha = 0,8.$$

14



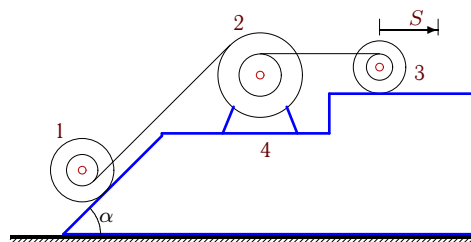
$$R_1 = 3, \quad r_1 = 2, \quad R_2 = 5, \quad r_2 = 3, \quad R_3 = 4, \quad r_3 = 3, \\ m_1 = 100, \quad m_2 = 10, \quad m_3 = 15, \quad m_4 = 15, \quad S = 140, \\ \cos \alpha = 0,6.$$

15



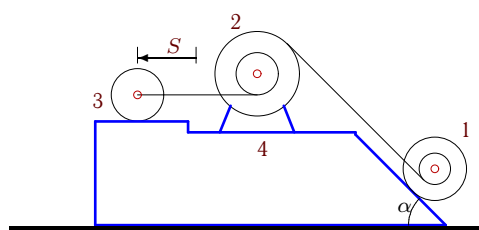
$$R_2 = 3, \quad r_2 = 2, \quad m_1 = 3, \quad m_2 = 15, \quad m_3 = 13, \\ m_4 = 13, \quad S = 132.$$

16



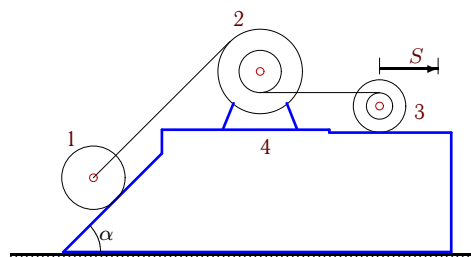
$$R_1 = 5, \quad r_1 = 3, \quad R_2 = 5, \quad r_2 = 3, \quad R_3 = 5, \quad r_3 = 3, \\ m_1 = 1, \quad m_2 = 15, \quad m_3 = 12, \quad m_4 = 15, \quad S = 129, \\ \cos \alpha = 0,6.$$

17



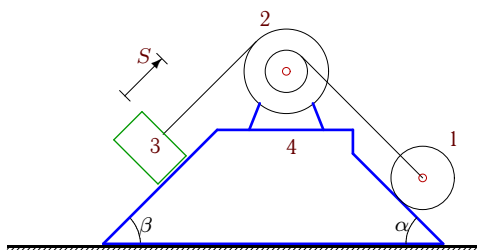
$$R_1 = 3, \quad r_1 = 2, \quad R_2 = 4, \quad r_2 = 3, \quad m_1 = 5, \quad m_2 = 13, \\ m_3 = 12, \quad m_4 = 13, \quad S = 86, \quad \cos \alpha = 0,8.$$

18



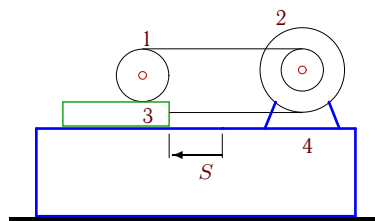
$$R_2 = 5, \quad r_2 = 3, \quad R_3 = 4, \quad r_3 = 3, \quad m_1 = 4, \quad m_2 = 12, \\ m_3 = 12, \quad m_4 = 15, \quad S = 86, \quad \cos \alpha = 0,6.$$

19



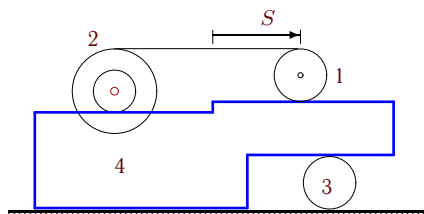
$$R_2 = 4, \quad r_2 = 3, \quad m_1 = 10, \quad m_2 = 13, \quad m_3 = 4, \\ m_4 = 10, \quad S = 37, \quad \cos \alpha = 0,8, \quad \beta = \pi/3.$$

20



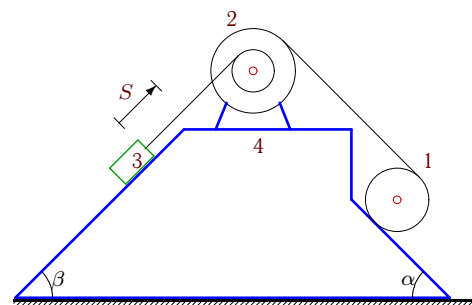
$$R_2 = 4, \quad r_2 = 2, \quad m_1 = 8, \quad m_2 = 13, \quad m_3 = 10, \\ m_4 = 12, \quad S = 43.$$

21



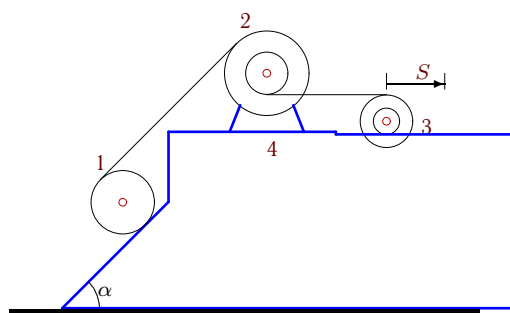
$$R_2 = 5, \quad r_2 = 3, \quad m_1 = 15, \quad m_2 = 8, \quad m_3 = 26, \\ m_4 = 15, \quad S = 204.$$

22



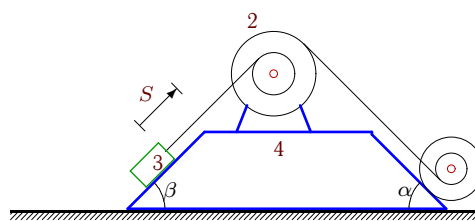
$$R_2 = 4, \quad r_2 = 2, \quad m_1 = 5, \quad m_2 = 12, \quad m_3 = 15, \\ m_4 = 15, \quad S = 141, \quad \cos \alpha = 0,8, \quad \cos \beta = 0,6.$$

23



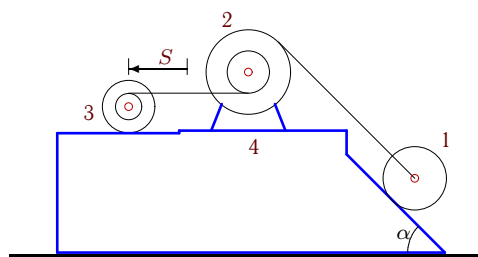
$R_2 = 4, r_2 = 2, R_3 = 5, r_3 = 3, m_1 = 5, m_2 = 10, m_3 = 10, m_4 = 15, S = 120, \cos \alpha = 0,6.$

24



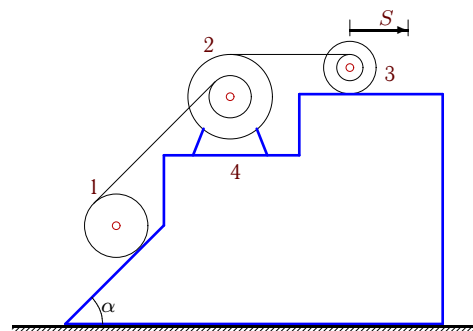
$R_1 = 4, r_1 = 3, R_2 = 4, r_2 = 2, m_1 = 5, m_2 = 13, m_3 = 6, m_4 = 12, S = 72, \cos \alpha = 0,8, \beta = \pi/3.$

25



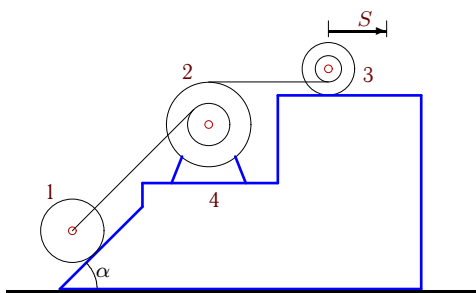
$R_2 = 4, r_2 = 2, R_3 = 5, r_3 = 3, m_1 = 25, m_2 = 12, m_3 = 10, m_4 = 12, S = 236, \cos \alpha = 0,8.$

26



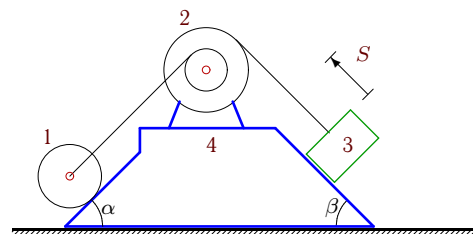
$R_2 = 3, r_2 = 2, R_3 = 4, r_3 = 3, m_1 = 20, m_2 = 10, m_3 = 10, m_4 = 10, S = 150, \cos \alpha = 0,6.$

27



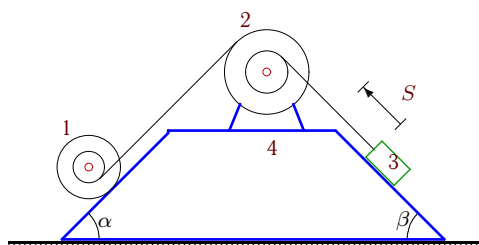
$R_2 = 5, r_2 = 3, R_3 = 4, r_3 = 3, m_1 = 40, m_2 = 12, m_3 = 15, m_4 = 12, S = 237, \alpha = \pi/3.$

28



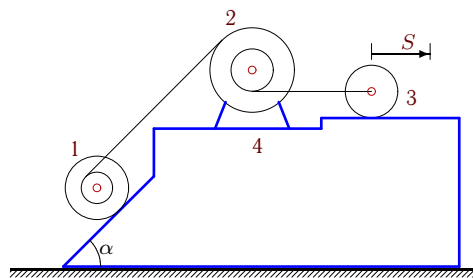
$R_2 = 5, r_2 = 3, m_1 = 20, m_2 = 12, m_3 = 4, m_4 = 12, S = 144, \alpha = \pi/3, \beta = \pi/3.$

29



$R_1 = 4, r_1 = 2, R_2 = 5, r_2 = 3, m_1 = 1, m_2 = 15, m_3 = 15, m_4 = 15, S = 138, \cos \alpha = 0,6, \cos \beta = 0,8.$

30



$R_1 = 5, r_1 = 3, R_2 = 4, r_2 = 2, m_1 = 8, m_2 = 12, m_3 = 10, m_4 = 15, S = 135, \alpha = \pi/3.$