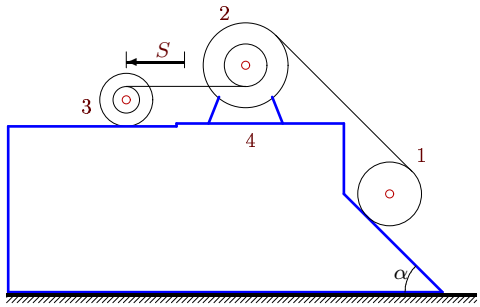
Теорема о центре масс системы

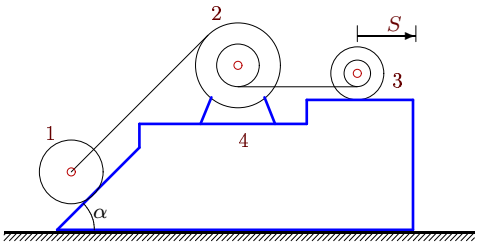
Механизм, состоящий из трех тел, установлен на призме, скользящей по гладкой плоскости. Нити, соединяющие тела, параллельны плоскостям. Под действием внутренних сил из состояния покоя механизм пришел в движение. Центр цилиндра (блока) или бруска сместился относительно призмы на расстояние S. Найти смещение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

Задача D-4.1. *Аббуд Карам Али*



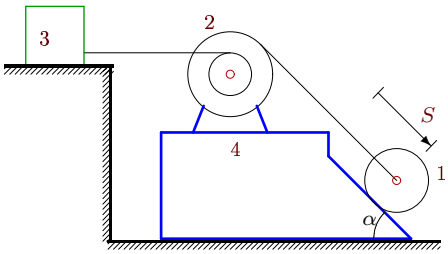
$R_2 = 4$, $r_2 = 2$, $R_3 = 3$, $r_3 = 2$, $m_1 = 3$, $m_2 = 13$, $m_3 = 13$, $m_4 = 12$, $S = 41$, $\cos\alpha = 0{,}8$.

Задача D-4.2. *Богомолова Арина*



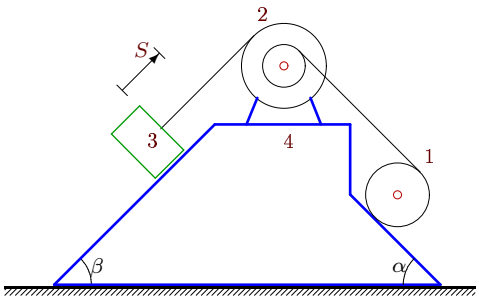
$R_2 = 5$, $r_2 = 3$, $R_3 = 3$, $r_3 = 2$, $m_1 = 3$, $m_2 = 12$, $m_3 = 12$, $m_4 = 15$, $S = 126$, $\cos\alpha = 0{,}6$.

Задача D-4.3. *Долгушев Алексей*



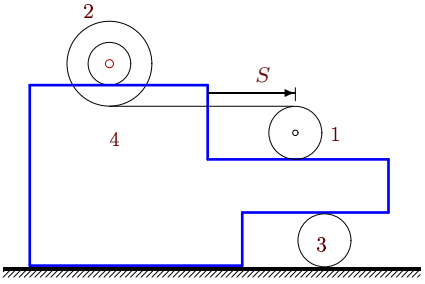
$R_2 = 3$, $r_2 = 2$, $m_1 = 10$, $m_2 = 13$, $m_3 = 6$, $m_4 = 13$, $S = 42$, $\cos\alpha = 0{,}8$.

Задача D-4.4. *Зайцев Сергей*



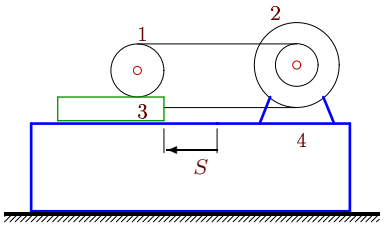
$R_2 = 3$, $r_2 = 2$, $m_1 = 15$, $m_2 = 10$, $m_3 = 2$, $m_4 = 13$, $S = 40$, $\cos\alpha = 0{,}8$, $\beta = \pi/3$.

Задача D-4.5. *Исаев Илья*



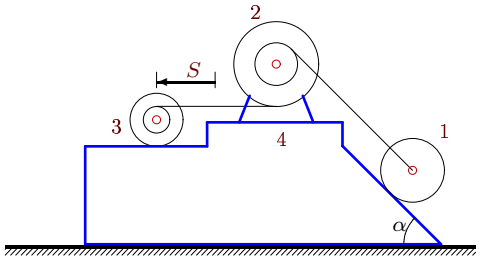
$R_2 = 4$, $r_2 = 3$, $m_1 = 12$, $m_2 = 6$, $m_3 = 26$, $m_4 = 12$, $S = 86$.

Задача D-4.6. *Камынин Даниил*



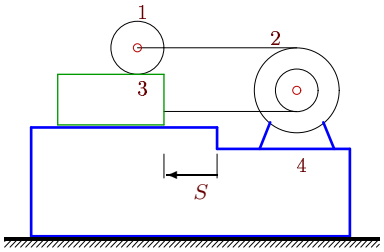
$R_2 = 4$, $r_2 = 2$, $m_1 = 8$, $m_2 = 13$, $m_3 = 10$, $m_4 = 12$, $S = 43$.

Задача D-4.7. *Коршиков Максим*



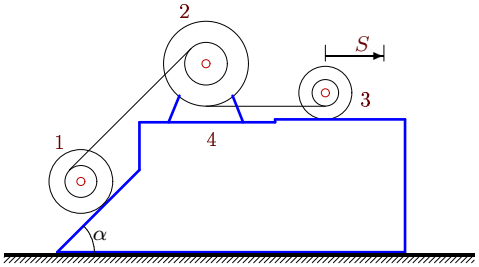
$R_2 = 4,\ r_2 = 2,\ R_3 = 3,\ r_3 = 2,\ m_1 = 3,\ m_2 = 13,\ m_3 = 10,\ m_4 = 15,\ S = 82,\ \cos\alpha = 0{,}8.$

Задача D-4.8. *Кузнецов Иван*



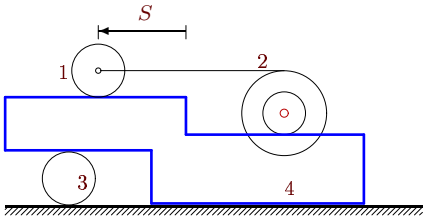
$R_2 = 4,\quad r_2 = 2,\quad m_1 = 2,\quad m_2 = 12,\quad m_3 = 13,\ m_4 = 15,\ S = 126.$

Задача D-4.9. *Куренкова Виктория*



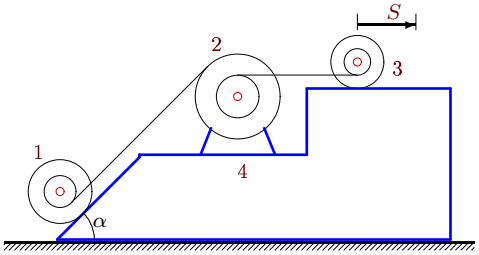
$R_1 = 4,\ r_1 = 2,\ R_2 = 4,\ r_2 = 2,\ R_3 = 4,\ r_3 = 2,\ m_1 = 12,\ m_2 = 12,\ m_3 = 13,\ m_4 = 15,\ S = 104,\ \alpha = \pi/3.$

Задача D-4.10. *Лысенкова Анастасия*



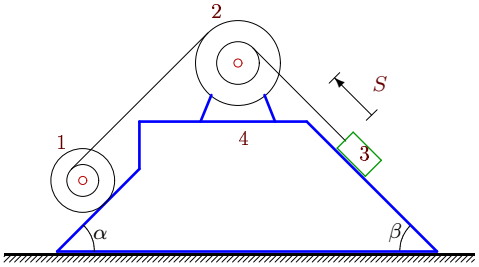
$R_2 = 5,\quad r_2 = 3,\quad m_1 = 15,\quad m_2 = 8,\quad m_3 = 26,\ m_4 = 12,\ S = 192.$

Задача D-4.11. *Львов Дмитрий*



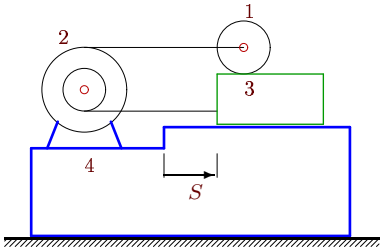
$R_1 = 4,\ r_1 = 2,\ R_2 = 4,\ r_2 = 3,\ R_3 = 4,\ r_3 = 3,\ m_1 = 5,\quad m_2 = 12,\quad m_3 = 12,\quad m_4 = 10,\quad S = 78,\ \cos\alpha = 0{,}6.$

Задача D-4.12. *Маликова Регина*



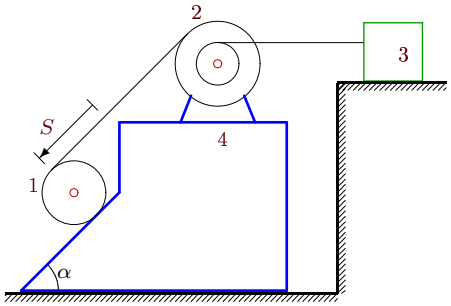
$R_1 = 4,\ r_1 = 2,\ R_2 = 4,\ r_2 = 3,\ m_1 = 18,\ m_2 = 12,\ m_3 = 4,\ m_4 = 10,\ S = 132,\ \alpha = \pi/3,\ \beta = \pi/3.$

Задача D-4.13. *Манеев Илья*



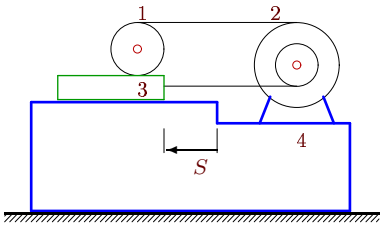
$R_2 = 4,\quad r_2 = 3,\quad m_1 = 3,\quad m_2 = 10,\quad m_3 = 15,\ m_4 = 13,\ S = 41.$

Задача D-4.14. *Опрокиднёв Эрнст*



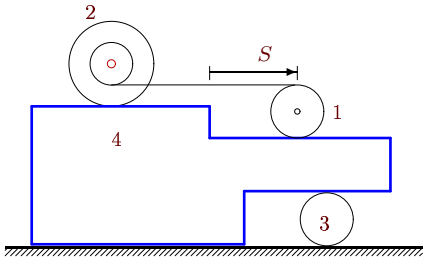
$R_2 = 4,\quad r_2 = 3,\quad m_1 = 2,\quad m_2 = 12,\quad m_3 = 2,\ m_4 = 10,\ S = 52,\ \alpha = \pi/3.$

Задача D-4.15. *Пошибаев Алексей*



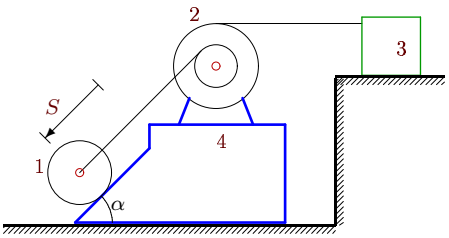
$R_2 = 4$, $r_2 = 3$, $m_1 = 6$, $m_2 = 15$, $m_3 = 15$, $m_4 = 10$, $S = 184$.

Задача D-4.16. *Привезенов Николай*



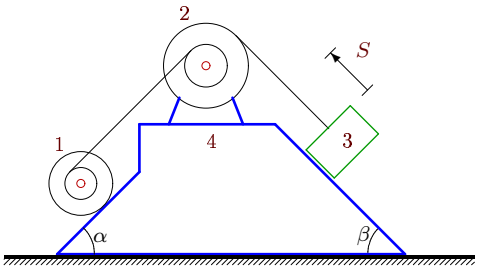
$R_2 = 4$, $r_2 = 2$, $m_1 = 10$, $m_2 = 4$, $m_3 = 26$, $m_4 = 15$, $S = 84$.

Задача D-4.17. *Пышкина Инна*



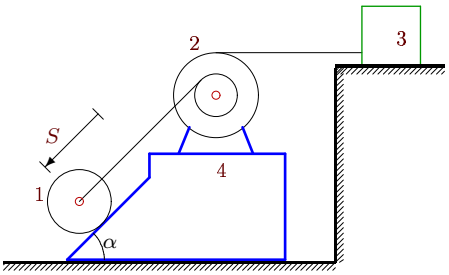
$R_2 = 5$, $r_2 = 3$, $m_1 = 4$, $m_2 = 12$, $m_3 = 3$, $m_4 = 12$, $S = 124$, $\alpha = \pi/3$.

Задача D-4.18. *Рашитов Данил*



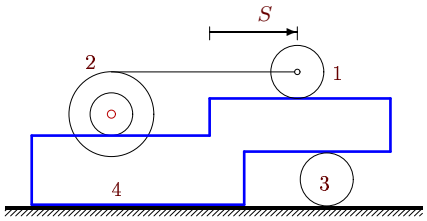
$R_1 = 4$, $r_1 = 3$, $R_2 = 4$, $r_2 = 2$, $m_1 = 35$, $m_2 = 13$, $m_3 = 6$, $m_4 = 15$, $S = 138$, $\cos\alpha = 0{,}6$, $\beta = \pi/3$.

Задача D-4.19. *Свиридов Георгий*



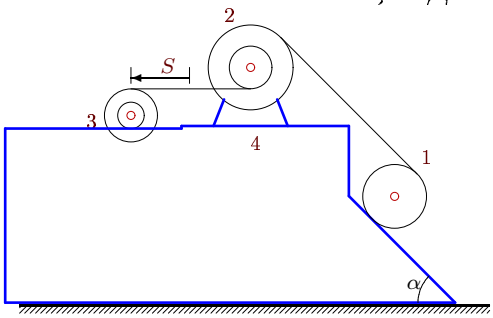
$R_2 = 3$, $r_2 = 2$, $m_1 = 5$, $m_2 = 15$, $m_3 = 4$, $m_4 = 13$, $S = 148$, $\cos\alpha = 0{,}6$.

Задача D-4.20. *Скляр Никита*



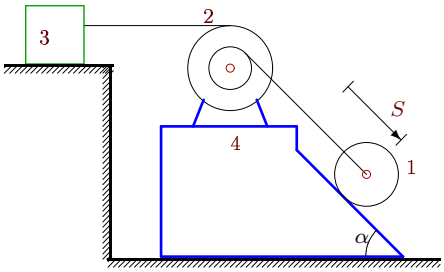
$R_2 = 3$, $r_2 = 2$, $m_1 = 13$, $m_2 = 10$, $m_3 = 24$, $m_4 = 15$, $S = 100$.

Задача D-4.21. *Телицын Данил*



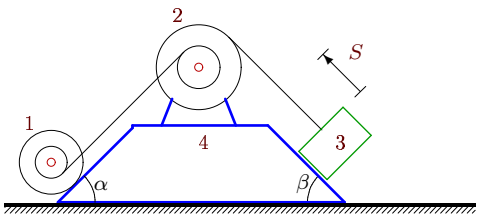
$R_2 = 4$, $r_2 = 3$, $R_3 = 5$, $r_3 = 3$, $m_1 = 45$, $m_2 = 15$, $m_3 = 12$, $m_4 = 13$, $S = 255$, $\cos\alpha = 0{,}8$.

Задача D-4.22. *Ковалев Д.*



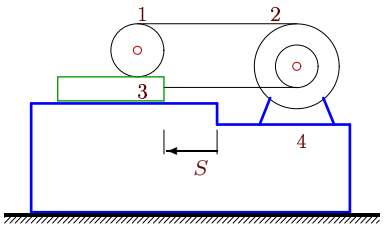
$R_2 = 3$, $r_2 = 2$, $m_1 = 10$, $m_2 = 10$, $m_3 = 4$, $m_4 = 13$, $S = 74$, $\cos\alpha = 0{,}8$.

Задача D-4.23. *Трякин Михаил*



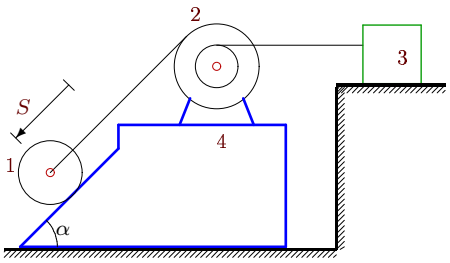
$R_1 = 4$, $r_1 = 2$, $R_2 = 4$, $r_2 = 2$, $m_1 = 2$, $m_2 = 15$, $m_3 = 8$, $m_4 = 15$, $S = 120$, $\alpha = \pi/3$, $\beta = \pi/3$.

Задача D-4.24. *Шибин Руслан*



$R_2 = 3$, $r_2 = 2$, $m_1 = 4$, $m_2 = 10$, $m_3 = 13$, $m_4 = 10$, $S = 74$.

Задача D-4.25. *Штыленко Антон*



$R_2 = 4$, $r_2 = 3$, $m_1 = 5$, $m_2 = 13$, $m_3 = 8$, $m_4 = 10$, $S = 36$, $\cos\alpha = 0{,}6$.