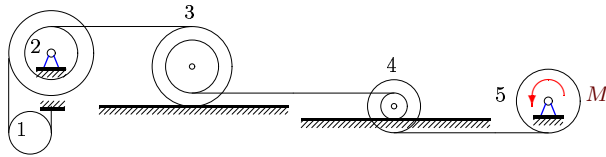


## Кинетическая энергия системы. Приведенные массы

Механическая система, состоящая из пяти тел 1, 2, 3, 4 и 5, движется под действием внешних сил. Заданы радиусы цилиндров и блоков. Радиусы инерции  $\rho$  даны для блоков, цилиндры считать однородными. Горизонтальный стержень, находящийся в зацеплении с блоками, считать невесомым. Массы даны в килограммах, радиусы — в сантиметрах. Вычислить приведенную массу системы  $\mu$  в формуле  $T = \mu v_1^2/2$ , где  $v_1$  — скорость груза 1 (или центра цилиндра 1).

Кирсанов М.Н. Задачи по теоретической механике с решениями в **Maple** 11. — М.: ФИЗМАТЛИТ, 2010. — 264 с. (с.111)

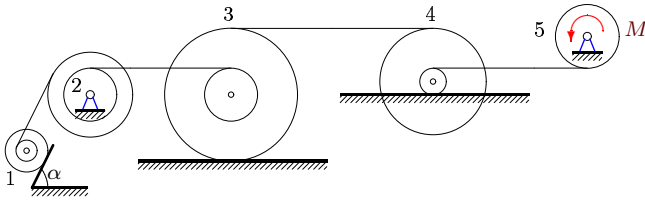
### Задача 33.1.



Агеев Владислав Андреевич

$$\begin{aligned} R_2 &= 4, r_2 = 2, \rho_2 = 2, \\ R_3 &= 3, r_3 = 2, \rho_3 = 2, \\ R_4 &= 2, r_4 = 1, \rho_4 = 1, \\ m_1 &= 2, m_2 = 24, \\ m_3 &= 144, m_4 = 216, \\ m_5 &= 288. \end{aligned}$$

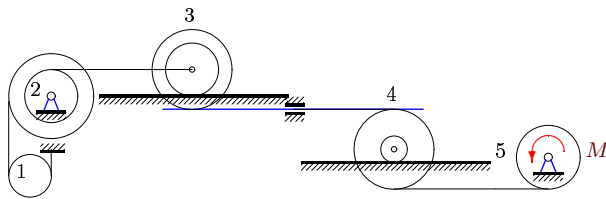
### Задача 33.2.



Ахметзянова Айша Рустамовна

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 1, \\ R_2 &= 3, r_2 = 2, \rho_2 = 2, \\ R_3 &= 5, r_3 = 2, \rho_3 = 4, \\ R_4 &= 4, r_4 = 1, \rho_4 = 3, \\ m_1 &= 4, m_2 = 16, \\ m_3 &= 196, m_4 = 147, \\ m_5 &= 196. \end{aligned}$$

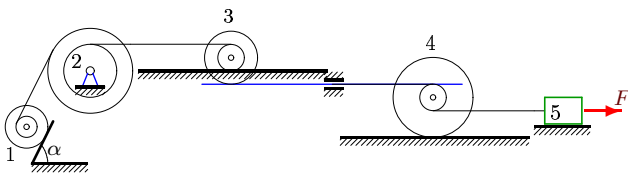
### Задача 33.3.



Витрук Ксения Павловна

$$\begin{aligned} R_2 &= 4, r_2 = 2, \rho_2 = 2, \\ R_3 &= 3, r_3 = 2, \rho_3 = 2, \\ R_4 &= 3, r_4 = 1, \rho_4 = 2, \\ m_1 &= 2, m_2 = 20, \\ m_3 &= 4, m_4 = 192, \\ m_5 &= 64. \end{aligned}$$

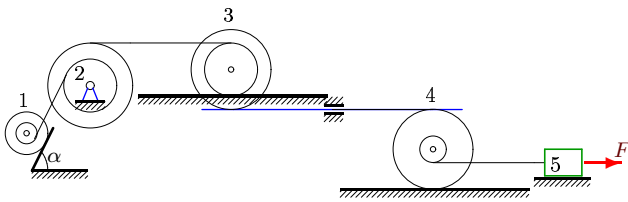
### Задача 33.4.



Гамалиенко Полина Борисовна

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 2, \\ R_2 &= 3, r_2 = 2, \rho_2 = 3, \\ R_3 &= 2, r_3 = 1, \rho_3 = 1, \\ R_4 &= 3, r_4 = 1, \rho_4 = 2, \\ m_1 &= 4, m_2 = 8, \\ m_3 &= 8, m_4 = 192, \\ m_5 &= 32. \end{aligned}$$

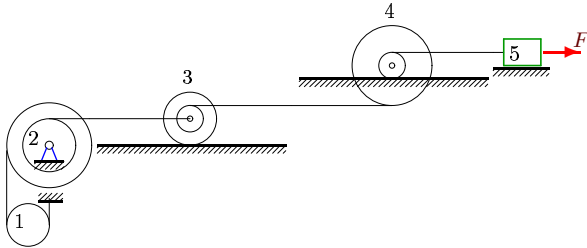
**Задача 33.5.**



Голубева Елизавета Николаевна

$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 2, \\
 R_2 &= 4, r_2 = 2, \rho_2 = 3, \\
 R_3 &= 3, r_3 = 2, \rho_3 = 2, \\
 R_4 &= 3, r_4 = 1, \rho_4 = 2, \\
 m_1 &= 4, m_2 = 80, \\
 m_3 &= 8, m_4 = 576, \\
 m_5 &= 144.
 \end{aligned}$$

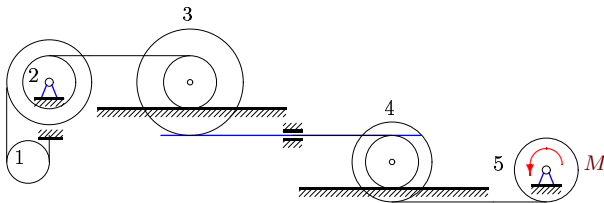
**Задача 33.6.**



Гребенникова Вероника Вячеславовна

$$\begin{aligned}
 R_2 &= 4, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 2, r_3 = 1, \rho_3 = 1, \\
 R_4 &= 3, r_4 = 1, \rho_4 = 2, \\
 m_1 &= 2, m_2 = 8, \\
 m_3 &= 16, m_4 = 48, \\
 m_5 &= 8.
 \end{aligned}$$

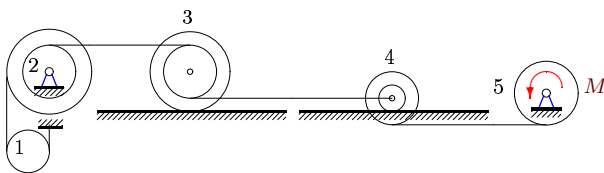
**Задача 33.7.**



Гречкина Полина Юрьевна

$$\begin{aligned}
 R_2 &= 4, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 4, r_3 = 2, \rho_3 = 3, \\
 R_4 &= 3, r_4 = 2, \rho_4 = 2, \\
 m_1 &= 2, m_2 = 4, \\
 m_3 &= 64, m_4 = 24, \\
 m_5 &= 128.
 \end{aligned}$$

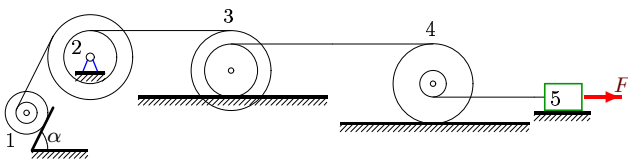
**Задача 33.8.**



Дергачев Андрей Андреевич

$$\begin{aligned}
 R_2 &= 4, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 3, r_3 = 2, \rho_3 = 2, \\
 R_4 &= 2, r_4 = 1, \rho_4 = 1, \\
 m_1 &= 2, m_2 = 24, \\
 m_3 &= 100, m_4 = 75, \\
 m_5 &= 100.
 \end{aligned}$$

**Задача 33.9.**

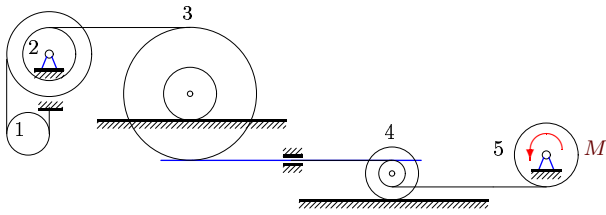


Жучкова Полина Михайловна

$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 2, \\
 R_2 &= 3, r_2 = 2, \rho_2 = 3, \\
 R_3 &= 3, r_3 = 2, \rho_3 = 2, \\
 R_4 &= 3, r_4 = 1, \rho_4 = 2, \\
 m_1 &= 4, m_2 = 8, \\
 m_3 &= 100, m_4 = 225, \\
 m_5 &= 225.
 \end{aligned}$$

**Задача 33.10.**

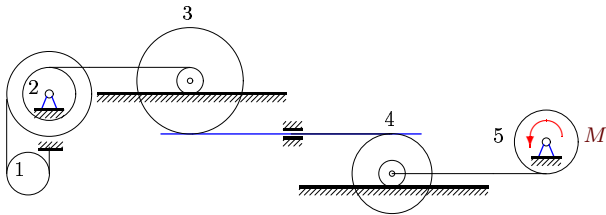
*Кириллова Виолетта Петровна*



$$\begin{aligned}
 R_2 &= 4, r_2 = 2, \rho_2 = 3, \\
 R_3 &= 5, r_3 = 2, \rho_3 = 4, \\
 R_4 &= 2, r_4 = 1, \rho_4 = 1, \\
 m_1 &= 2, m_2 = 4, \\
 m_3 &= 196, m_4 = 147, \\
 m_5 &= 196.
 \end{aligned}$$

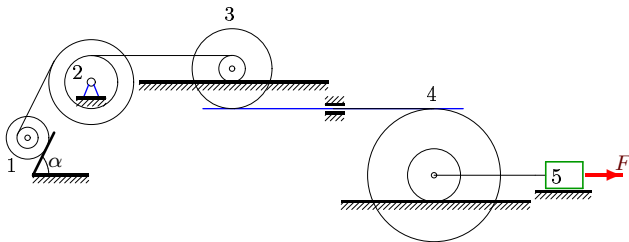
**Задача 33.11.**

*Козырева Ольга Сергеевна*



$$\begin{aligned}
 R_2 &= 4, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 4, r_3 = 1, \rho_3 = 3, \\
 R_4 &= 3, r_4 = 1, \rho_4 = 2, \\
 m_1 &= 2, m_2 = 8, \\
 m_3 &= 8, m_4 = 192, \\
 m_5 &= 128.
 \end{aligned}$$

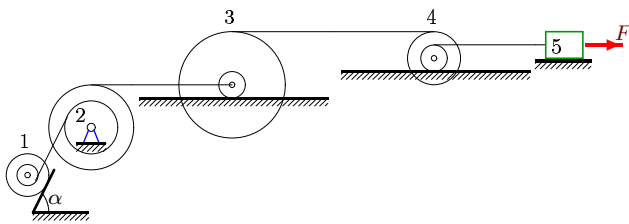
**Задача 33.12.**



$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 1, \\
 R_2 &= 3, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 3, r_3 = 1, \rho_3 = 2, \\
 R_4 &= 5, r_4 = 2, \rho_4 = 4, \\
 m_1 &= 4, m_2 = 12, \\
 m_3 &= 16, m_4 = 147, \\
 m_5 &= 98.
 \end{aligned}$$

**Задача 33.13.**

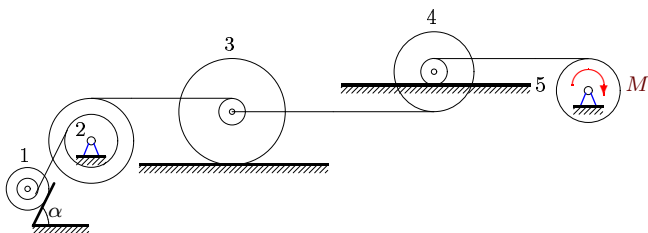
*Матвеева Екатерина Валентиновна*



$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 1, \\
 R_2 &= 4, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 4, r_3 = 1, \rho_3 = 3, \\
 R_4 &= 2, r_4 = 1, \rho_4 = 1, \\
 m_1 &= 12, m_2 = 96, \\
 m_3 &= 6, m_4 = 45, \\
 m_5 &= 36.
 \end{aligned}$$

**Задача 33.14.**

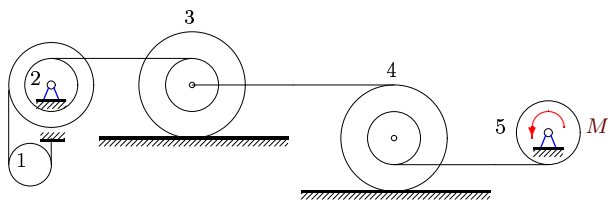
*Медведева Евгения Александровна*



$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 1, \\
 R_2 &= 4, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 4, r_3 = 1, \rho_3 = 3, \\
 R_4 &= 3, r_4 = 1, \rho_4 = 2, \\
 m_1 &= 4, m_2 = 32, \\
 m_3 &= 4, m_4 = 15, \\
 m_5 &= 100.
 \end{aligned}$$

**Задача 33.15.**

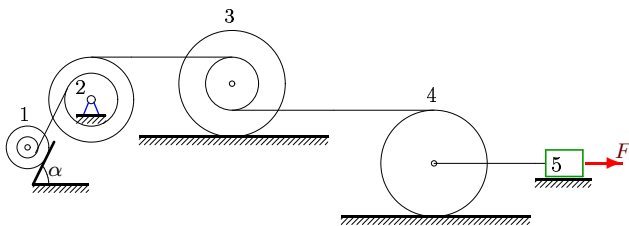
*Мясоедов Роман Сергеевич*



$$\begin{aligned}
 R_2 &= 4, r_2 = 2, \rho_2 = 3, \\
 R_3 &= 4, r_3 = 2, \rho_3 = 3, \\
 R_4 &= 4, r_4 = 2, \rho_4 = 3, \\
 m_1 &= 4, m_2 = 8, \\
 m_3 &= 180, m_4 = 144, \\
 m_5 &= 216.
 \end{aligned}$$

**Задача 33.16.**

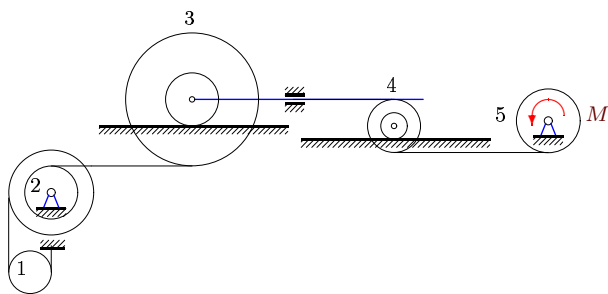
*Ненашева Дарьяна Вячеславовна*



$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 1, \\
 R_2 &= 4, r_2 = 2, \rho_2 = 3, \\
 R_3 &= 4, r_3 = 2, \rho_3 = 3, \\
 R_4 &= 4, \\
 m_1 &= 4, m_2 = 16, \\
 m_3 &= 144, m_4 = 72, \\
 m_5 &= 72.
 \end{aligned}$$

**Задача 33.17.**

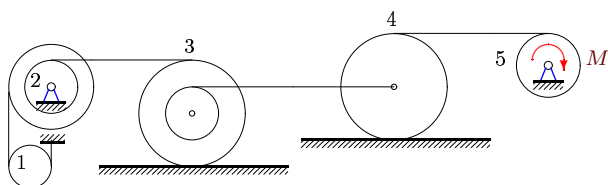
*Обухов Андрей Владимирович*



$$\begin{aligned}
 R_2 &= 4, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 5, r_3 = 2, \rho_3 = 4, \\
 R_4 &= 2, r_4 = 1, \rho_4 = 1, \\
 m_1 &= 8, m_2 = 24, \\
 m_3 &= 63, m_4 = 486, \\
 m_5 &= 162.
 \end{aligned}$$

**Задача 33.18.**

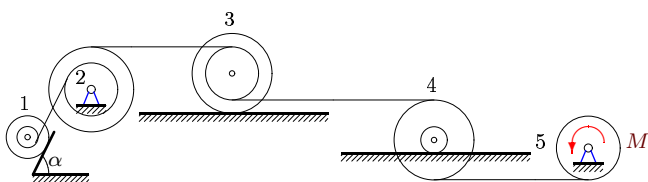
*Павловский Александр Валерьевич*



$$\begin{aligned}
 R_2 &= 4, r_2 = 2, \rho_2 = 3, \\
 R_3 &= 4, r_3 = 2, \rho_3 = 3, \\
 R_4 &= 4, \\
 m_1 &= 2, m_2 = 20, \\
 m_3 &= 256, m_4 = 96, \\
 m_5 &= 16.
 \end{aligned}$$

**Задача 33.19.**

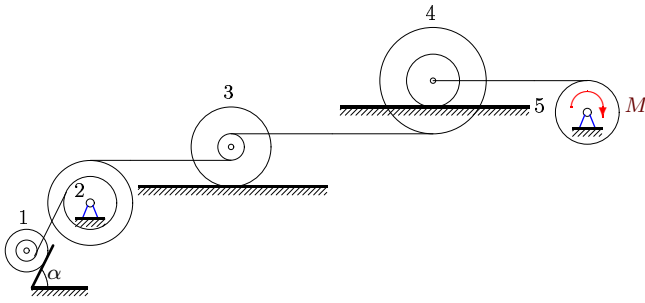
*Петрова Екатерина Григорьевна*



$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 2, \\
 R_2 &= 4, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 3, r_3 = 2, \rho_3 = 2, \\
 R_4 &= 3, r_4 = 1, \rho_4 = 2, \\
 m_1 &= 16, m_2 = 32, \\
 m_3 &= 175, m_4 = 480, \\
 m_5 &= 200.
 \end{aligned}$$

**Задача 33.20.**

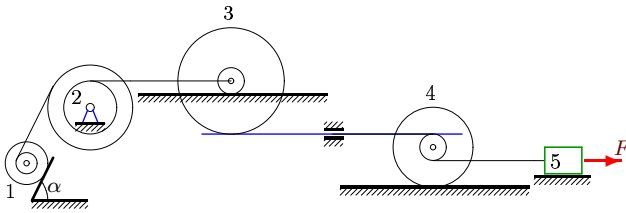
*Петунин Никита Михайлович*



$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 1, \\
 R_2 &= 4, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 3, r_3 = 1, \rho_3 = 2, \\
 R_4 &= 4, r_4 = 2, \rho_4 = 3, \\
 m_1 &= 4, m_2 = 80, \\
 m_3 &= 16, m_4 = 3, \\
 m_5 &= 4.
 \end{aligned}$$

**Задача 33.21.**

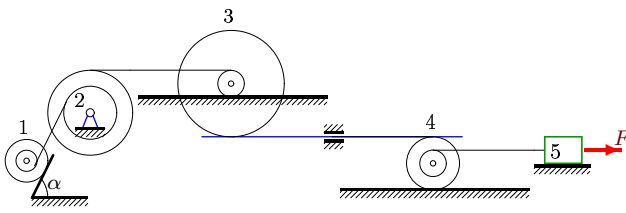
*Пуликова Юлия Сергеевна*



$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 1, \\
 R_2 &= 3, r_2 = 2, \rho_2 = 3, \\
 R_3 &= 4, r_3 = 1, \rho_3 = 3, \\
 R_4 &= 3, r_4 = 1, \rho_4 = 2, \\
 m_1 &= 20, m_2 = 20, \\
 m_3 &= 8, m_4 = 112, \\
 m_5 &= 24.
 \end{aligned}$$

**Задача 33.22.**

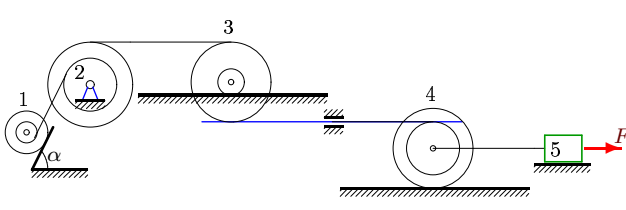
*Рулев Кирилл Юрьевич*



$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 1, \\
 R_2 &= 4, r_2 = 2, \rho_2 = 3, \\
 R_3 &= 4, r_3 = 1, \rho_3 = 3, \\
 R_4 &= 2, r_4 = 1, \rho_4 = 1, \\
 m_1 &= 4, m_2 = 16, \\
 m_3 &= 8, m_4 = 192, \\
 m_5 &= 128.
 \end{aligned}$$

**Задача 33.23.**

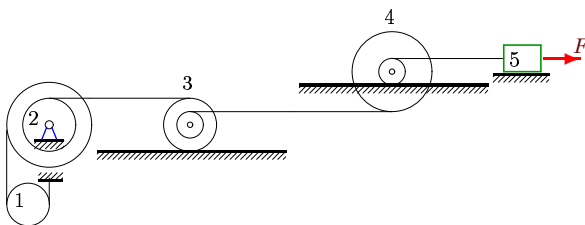
*Руснак Дмитрий Юрьевич*



$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 1, \\
 R_2 &= 4, r_2 = 2, \rho_2 = 3, \\
 R_3 &= 3, r_3 = 1, \rho_3 = 2, \\
 R_4 &= 3, r_4 = 2, \rho_4 = 2, \\
 m_1 &= 4, m_2 = 96, \\
 m_3 &= 64, m_4 = 100, \\
 m_5 &= 100.
 \end{aligned}$$

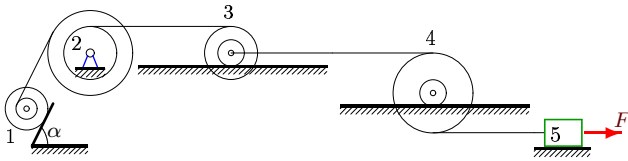
**Задача 33.24.**

*Семенова Софья Валерьевна*



$$\begin{aligned}
 R_2 &= 4, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 2, r_3 = 1, \rho_3 = 1, \\
 R_4 &= 3, r_4 = 1, \rho_4 = 2, \\
 m_1 &= 2, m_2 = 20, \\
 m_3 &= 64, m_4 = 192, \\
 m_5 &= 32.
 \end{aligned}$$

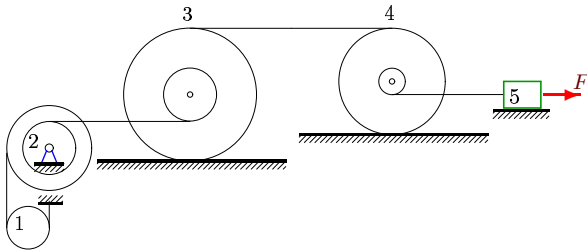
**Задача 33.25.**



*Сигитов Артем Андреевич*

$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 2, \\
 R_2 &= 3, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 2, r_3 = 1, \rho_3 = 1, \\
 R_4 &= 3, r_4 = 1, \rho_4 = 2, \\
 m_1 &= 4, m_2 = 8, \\
 m_3 &= 36, m_4 = 144, \\
 m_5 &= 72.
 \end{aligned}$$

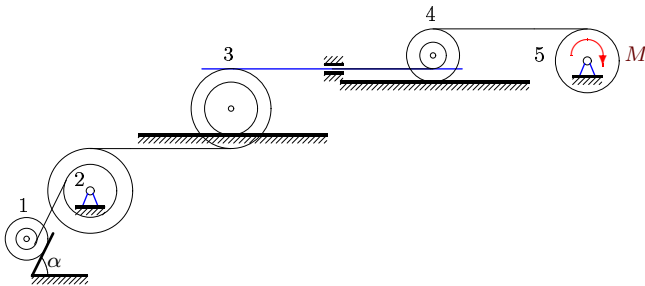
**Задача 33.26.**



*Симчук Татьяна Александровна*

$$\begin{aligned}
 R_2 &= 4, r_2 = 2, \rho_2 = 3, \\
 R_3 &= 5, r_3 = 2, \rho_3 = 4, \\
 R_4 &= 4, r_4 = 1, \rho_4 = 3, \\
 m_1 &= 2, m_2 = 12, \\
 m_3 &= 36, m_4 = 144, \\
 m_5 &= 32.
 \end{aligned}$$

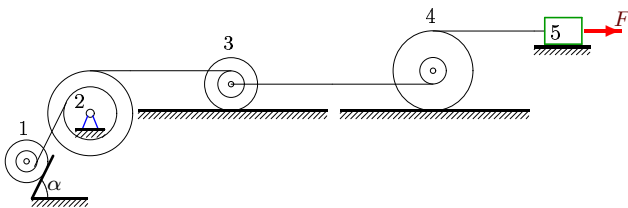
**Задача 33.27.**



*Сужач Иван Андреевич*

$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 2, \\
 R_2 &= 4, r_2 = 2, \rho_2 = 3, \\
 R_3 &= 3, r_3 = 2, \rho_3 = 2, \\
 R_4 &= 2, r_4 = 1, \rho_4 = 1, \\
 m_1 &= 4, m_2 = 96, \\
 m_3 &= 4, m_4 = 1, \\
 m_5 &= 2.
 \end{aligned}$$

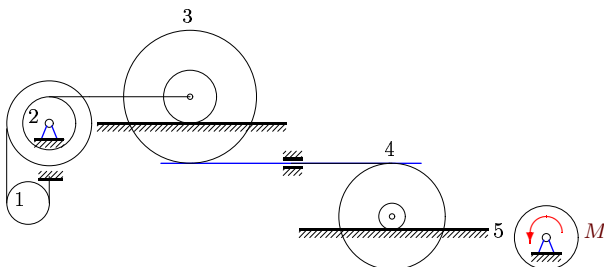
**Задача 33.28.**



*Филитпов Даниил Валерьевич*

$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 2, \\
 R_2 &= 4, r_2 = 2, \rho_2 = 3, \\
 R_3 &= 2, r_3 = 1, \rho_3 = 1, \\
 R_4 &= 3, r_4 = 1, \rho_4 = 2, \\
 m_1 &= 4, m_2 = 32, \\
 m_3 &= 36, m_4 = 27, \\
 m_5 &= 2.
 \end{aligned}$$

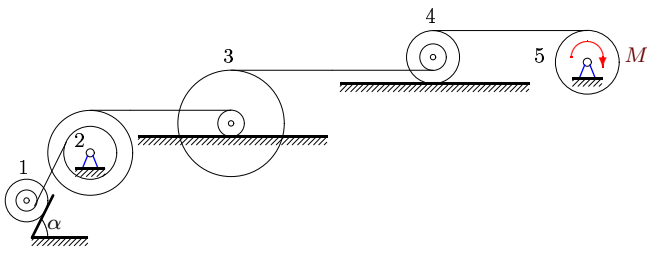
**Задача 33.29.**



*Юрцев Леонид Сергеевич*

$$\begin{aligned}
 R_2 &= 4, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 5, r_3 = 2, \rho_3 = 4, \\
 R_4 &= 4, r_4 = 1, \rho_4 = 3, \\
 m_1 &= 2, m_2 = 16, \\
 m_3 &= 4, m_4 = 30, \\
 m_5 &= 200.
 \end{aligned}$$

Задача 33.30.



$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 1, \\
 R_2 &= 4, r_2 = 2, \rho_2 = 3, \\
 R_3 &= 4, r_3 = 1, \rho_3 = 3, \\
 R_4 &= 2, r_4 = 1, \rho_4 = 1, \\
 m_1 &= 4, m_2 = 96, \\
 m_3 &= 8, m_4 = 4, \\
 m_5 &= 4.
 \end{aligned}$$