

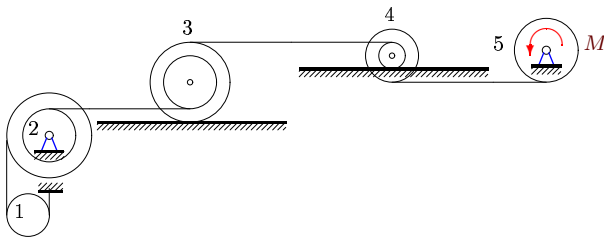
Кинетическая энергия системы. Приведенные массы

Механическая система, состоящая из пяти тел 1, 2, 3, 4 и 5, движется под действием внешних сил. Заданы радиусы цилиндров и блоков. Радиусы инерции ρ 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 μ 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.

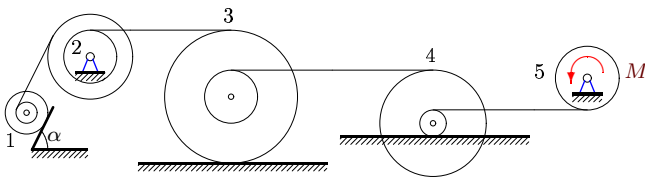
Гарбузов Иван Дмитриевич



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

Задача 33.2.

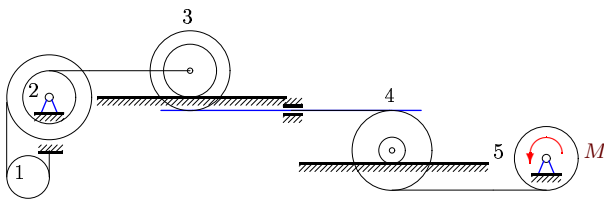
Ерочкина Софья Сергеевна



$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 1, \\ R_2 &= 3, r_2 = 2, \rho_2 = 2, \\ R_3 &= 5, r_3 = 2, \rho_3 = 4, \\ R_4 &= 4, r_4 = 1, \rho_4 = 3, \\ m_1 &= 4, m_2 = 16, \\ m_3 &= 100, m_4 = 250, \\ m_5 &= 1250. \end{aligned}$$

Задача 33.3.

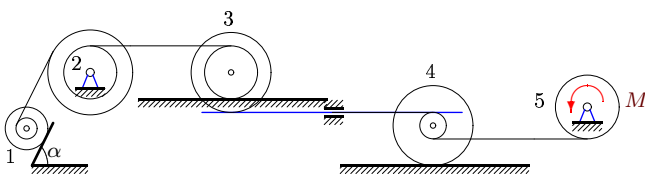
Жирнова Анна Олеговна



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

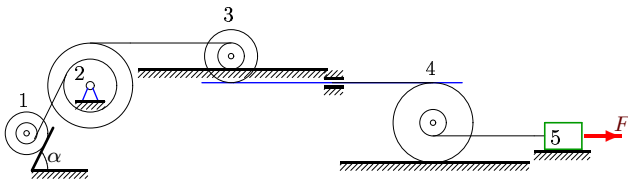
Задача 33.4.

Ильин Георгий Сергеевич



$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 2, \\ R_2 &= 3, r_2 = 2, \rho_2 = 3, \\ R_3 &= 3, r_3 = 2, \rho_3 = 2, \\ R_4 &= 3, r_4 = 1, \rho_4 = 2, \\ m_1 &= 4, m_2 = 8, \\ m_3 &= 8, m_4 = 256, \\ m_5 &= 128. \end{aligned}$$

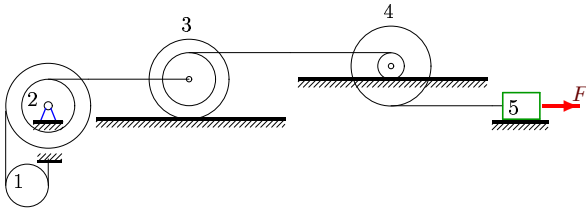
Задача 33.5.



Лиманская Ева Евгеньевна

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 2, \\ R_2 &= 4, r_2 = 2, \rho_2 = 3, \\ R_3 &= 2, r_3 = 1, \rho_3 = 1, \\ R_4 &= 3, r_4 = 1, \rho_4 = 2, \\ m_1 &= 4, m_2 = 80, \\ m_3 &= 8, m_4 = 144, \\ m_5 &= 72. \end{aligned}$$

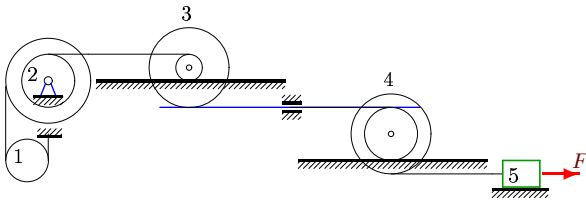
Задача 33.6.



Набатова Ксения Михайловна

$$\begin{aligned} R_2 &= 4, r_2 = 2, \rho_2 = 2, \\ R_3 &= 3, r_3 = 2, \rho_3 = 2, \\ R_4 &= 3, r_4 = 1, \rho_4 = 2, \\ m_1 &= 2, m_2 = 8, \\ m_3 &= 36, m_4 = 36, \\ m_5 &= 18. \end{aligned}$$

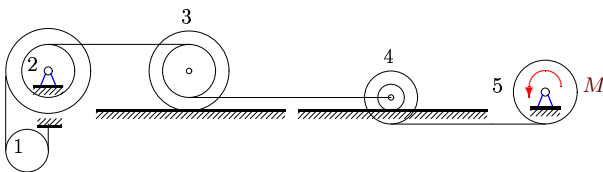
Задача 33.7.



Осипова Светлана Сергеевна

$$\begin{aligned} R_2 &= 4, r_2 = 2, \rho_2 = 2, \\ R_3 &= 3, r_3 = 1, \rho_3 = 2, \\ R_4 &= 3, r_4 = 2, \rho_4 = 2, \\ m_1 &= 2, m_2 = 4, \\ m_3 &= 16, m_4 = 6, \\ m_5 &= 32. \end{aligned}$$

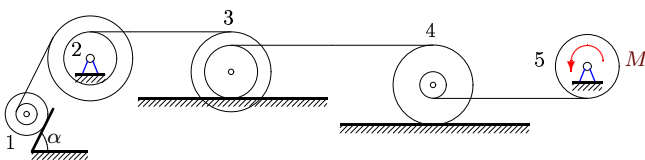
Задача 33.8.



Петров Константин Эдуардович

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

Задача 33.9.

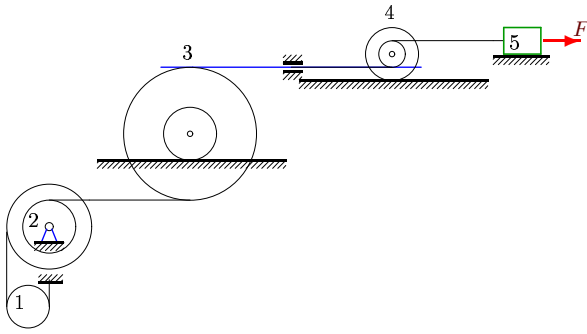


Садовников Владимир Дмитриевич

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 2, \\ R_2 &= 3, r_2 = 2, \rho_2 = 3, \\ R_3 &= 3, r_3 = 2, \rho_3 = 2, \\ R_4 &= 3, r_4 = 1, \rho_4 = 2, \\ m_1 &= 4, m_2 = 8, \\ m_3 &= 100, m_4 = 225, \\ m_5 &= 450. \end{aligned}$$

Задача 33.10.

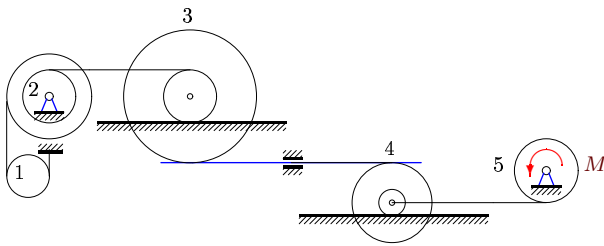
Самигуллина Камила Равиловна



$$\begin{aligned}
 R_2 &= 4, r_2 = 2, \rho_2 = 3, \\
 R_3 &= 5, r_3 = 2, \rho_3 = 4, \\
 R_4 &= 2, r_4 = 1, \rho_4 = 1, \\
 m_1 &= 2, m_2 = 4, \\
 m_3 &= 36, m_4 = 9, \\
 m_5 &= 2.
 \end{aligned}$$

Задача 33.11.

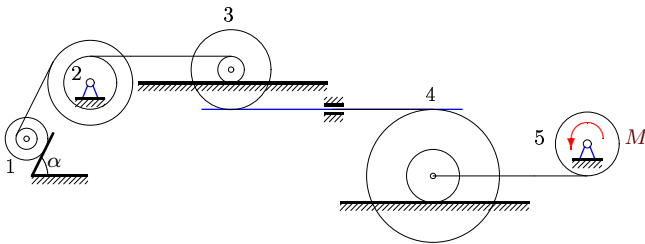
Сныткин Александр Евгеньевич



$$\begin{aligned}
 R_2 &= 4, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 5, r_3 = 2, \rho_3 = 4, \\
 R_4 &= 3, r_4 = 1, \rho_4 = 2, \\
 m_1 &= 2, m_2 = 8, \\
 m_3 &= 16, m_4 = 256, \\
 m_5 &= 512.
 \end{aligned}$$

Задача 33.12.

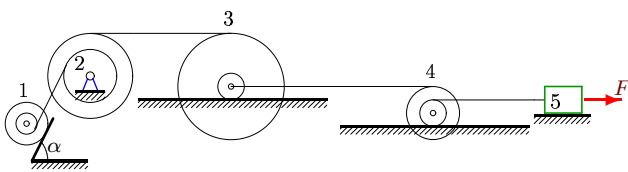
Хисматова Динара Ильнарловна



$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 1, \\
 R_2 &= 3, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 3, r_3 = 1, \rho_3 = 2, \\
 R_4 &= 5, r_4 = 2, \rho_4 = 4, \\
 m_1 &= 4, m_2 = 12, \\
 m_3 &= 16, m_4 = 147, \\
 m_5 &= 196.
 \end{aligned}$$

Задача 33.13.

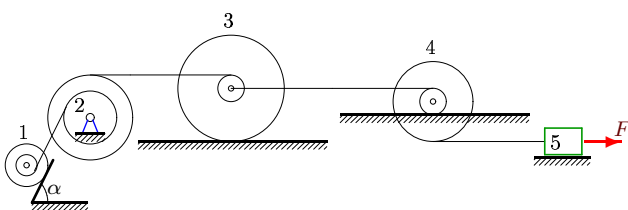
Чернат Герман Сергеевич



$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 1, \\
 R_2 &= 4, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 4, r_3 = 1, \rho_3 = 3, \\
 R_4 &= 2, r_4 = 1, \rho_4 = 1, \\
 m_1 &= 4, m_2 = 96, \\
 m_3 &= 20, m_4 = 225, \\
 m_5 &= 225.
 \end{aligned}$$

Задача 33.14.

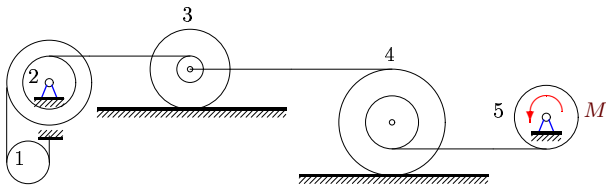
Щепотьев Никита Юрьевич



$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 1, \\
 R_2 &= 4, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 4, r_3 = 1, \rho_3 = 3, \\
 R_4 &= 3, r_4 = 1, \rho_4 = 2, \\
 m_1 &= 12, m_2 = 32, \\
 m_3 &= 6, m_4 = 25, \\
 m_5 &= 100.
 \end{aligned}$$

Задача 33.15.

Акопова Анна Юрьевна



$$R_2 = 4, r_2 = 2, \rho_2 = 3,$$

$$R_3 = 3, r_3 = 1, \rho_3 = 2,$$

$$R_4 = 4, r_4 = 2, \rho_4 = 3,$$

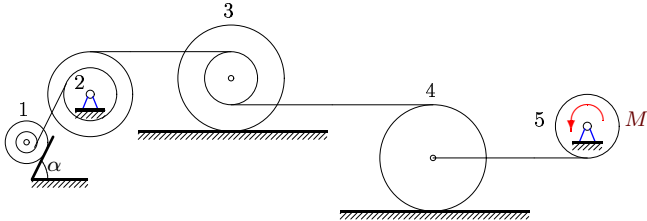
$$m_1 = 2, m_2 = 8,$$

$$m_3 = 64, m_4 = 1024,$$

$$m_5 = 512.$$

Задача 33.16.

Ахмедов Джамал Магомедович



$$R_1 = 2, r_1 = 1, \rho_1 = 1,$$

$$R_2 = 4, r_2 = 2, \rho_2 = 3,$$

$$R_3 = 4, r_3 = 2, \rho_3 = 3,$$

$$R_4 = 4,$$

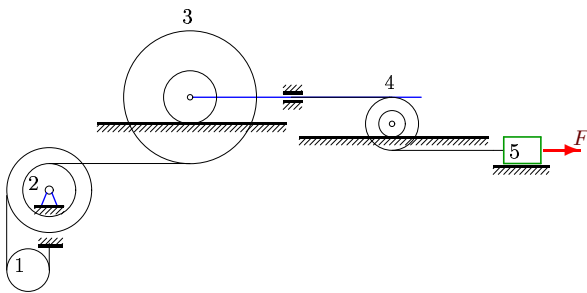
$$m_1 = 8, m_2 = 16,$$

$$m_3 = 180, m_4 = 96,$$

$$m_5 = 216.$$

Задача 33.17.

Бадаев Абдурашид Алибегович



$$R_2 = 4, r_2 = 2, \rho_2 = 2,$$

$$R_3 = 5, r_3 = 2, \rho_3 = 4,$$

$$R_4 = 2, r_4 = 1, \rho_4 = 1,$$

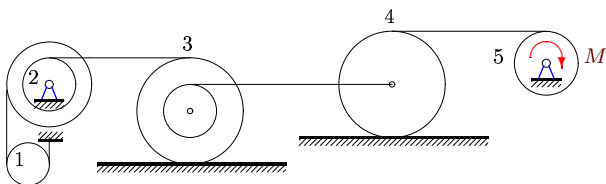
$$m_1 = 2, m_2 = 24,$$

$$m_3 = 36, m_4 = 243,$$

$$m_5 = 162.$$

Задача 33.18.

Бондарева Анна Дмитриевна



$$R_2 = 4, r_2 = 2, \rho_2 = 3,$$

$$R_3 = 4, r_3 = 2, \rho_3 = 3,$$

$$R_4 = 4,$$

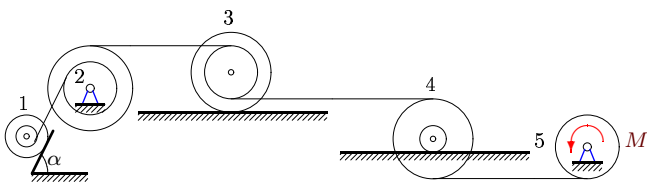
$$m_1 = 8, m_2 = 20,$$

$$m_3 = 448, m_4 = 192,$$

$$m_5 = 40.$$

Задача 33.19.

Гаевой Дмитрий Александрович



$$R_1 = 2, r_1 = 1, \rho_1 = 2,$$

$$R_2 = 4, r_2 = 2, \rho_2 = 2,$$

$$R_3 = 3, r_3 = 2, \rho_3 = 2,$$

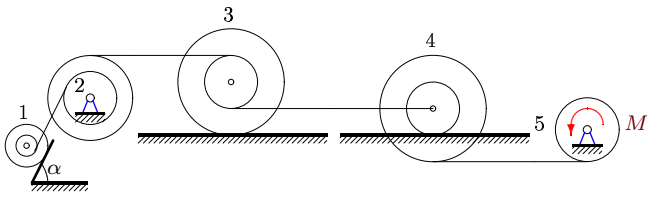
$$R_4 = 3, r_4 = 1, \rho_4 = 2,$$

$$m_1 = 4, m_2 = 32,$$

$$m_3 = 100, m_4 = 240,$$

$$m_5 = 200.$$

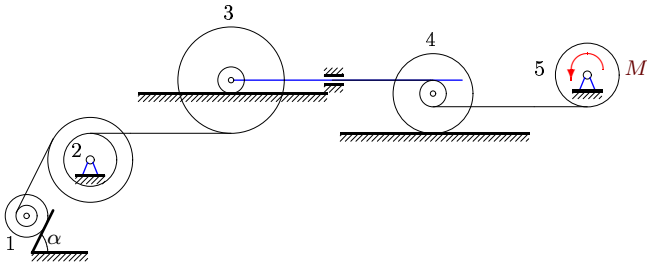
Задача 33.20.



Гильмутдинов Раиль Ильнорович

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 1, \\ R_2 &= 4, r_2 = 2, \rho_2 = 2, \\ R_3 &= 4, r_3 = 2, \rho_3 = 3, \\ R_4 &= 4, r_4 = 2, \rho_4 = 3, \\ m_1 &= 16, m_2 = 80, \\ m_3 &= 252, m_4 = 216, \\ m_5 &= 90. \end{aligned}$$

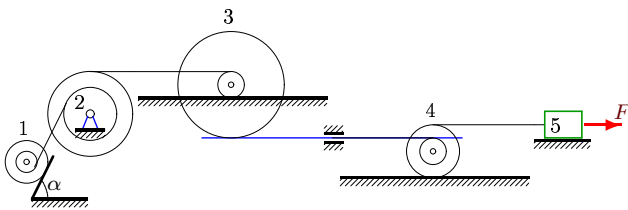
Задача 33.21.



Котельников Клим Константинович

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 1, \\ R_2 &= 3, r_2 = 2, \rho_2 = 3, \\ R_3 &= 4, r_3 = 1, \rho_3 = 3, \\ R_4 &= 3, r_4 = 1, \rho_4 = 2, \\ m_1 &= 4, m_2 = 20, \\ m_3 &= 36, m_4 = 144, \\ m_5 &= 144. \end{aligned}$$

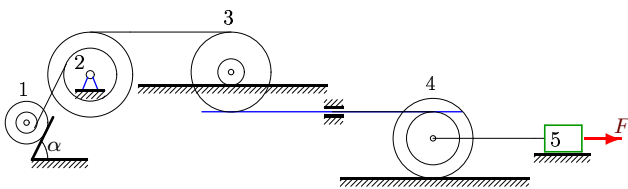
Задача 33.22.



Кривова Ольга Викторовна

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 1, \\ R_2 &= 4, r_2 = 2, \rho_2 = 3, \\ R_3 &= 4, r_3 = 1, \rho_3 = 3, \\ R_4 &= 2, r_4 = 1, \rho_4 = 1, \\ m_1 &= 20, m_2 = 16, \\ m_3 &= 16, m_4 = 28, \\ m_5 &= 6. \end{aligned}$$

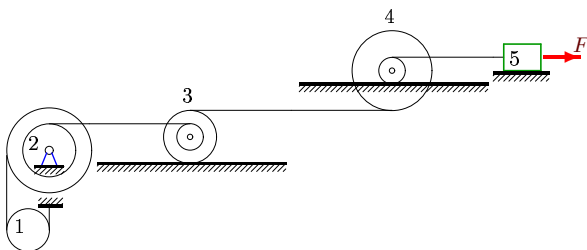
Задача 33.23.



Моисеев Александр Викторович

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

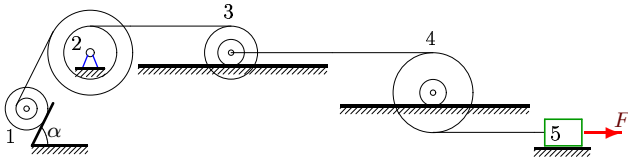
Задача 33.24.



Мхитарян Анжела Манвеловна

$$\begin{aligned} R_2 &= 4, r_2 = 2, \rho_2 = 2, \\ R_3 &= 2, r_3 = 1, \rho_3 = 1, \\ R_4 &= 3, r_4 = 1, \rho_4 = 2, \\ m_1 &= 2, m_2 = 20, \\ m_3 &= 36, m_4 = 27, \\ m_5 &= 18. \end{aligned}$$

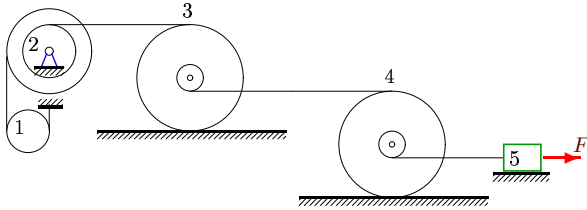
Задача 33.25.



Савин Руслан Викторович

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

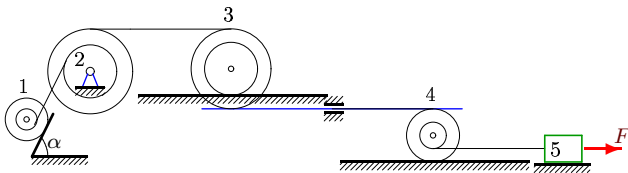
Задача 33.26.



Самойленко Кристина Дмитриевна

$$\begin{aligned}
 R_2 &= 4, r_2 = 2, \rho_2 = 3, \\
 R_3 &= 4, r_3 = 1, \rho_3 = 3, \\
 R_4 &= 4, r_4 = 1, \rho_4 = 3, \\
 m_1 &= 2, m_2 = 12, \\
 m_3 &= 256, m_4 = 4096, \\
 m_5 &= 4096.
 \end{aligned}$$

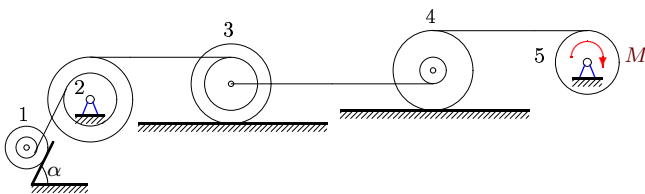
Задача 33.27.



Скаржевская Ганна Алексеевна

$$\begin{aligned}
 R_1 &= 2, r_1 = 1, \rho_1 = 2, \\
 R_2 &= 4, r_2 = 2, \rho_2 = 3, \\
 R_3 &= 3, r_3 = 2, \rho_3 = 2, \\
 R_4 &= 2, r_4 = 1, \rho_4 = 1, \\
 m_1 &= 4, m_2 = 96, \\
 m_3 &= 100, m_4 = 240, \\
 m_5 &= 400.
 \end{aligned}$$

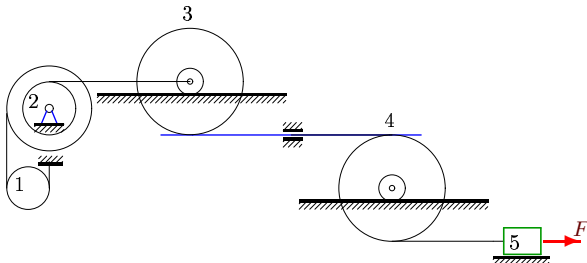
Задача 33.28.



Сучкова Мария Витальевна

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

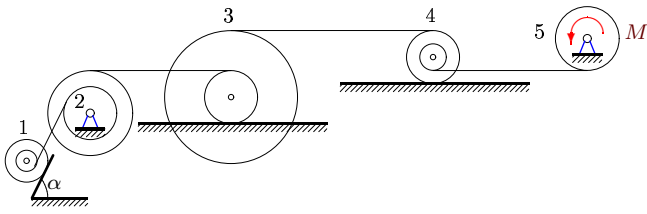
Задача 33.29.



Шагиева Самира Маратовна

$$\begin{aligned}
 R_2 &= 4, r_2 = 2, \rho_2 = 2, \\
 R_3 &= 4, r_3 = 1, \rho_3 = 3, \\
 R_4 &= 4, r_4 = 1, \rho_4 = 3, \\
 m_1 &= 2, m_2 = 16, \\
 m_3 &= 4, m_4 = 15, \\
 m_5 &= 50.
 \end{aligned}$$

Задача 33.30.



Шмелева Валерия Сергеевна

$$R_1 = 2, r_1 = 1, \rho_1 = 1,$$

$$R_2 = 4, r_2 = 2, \rho_2 = 3,$$

$$R_3 = 5, r_3 = 2, \rho_3 = 4,$$

$$R_4 = 2, r_4 = 1, \rho_4 = 1,$$

$$m_1 = 4, m_2 = 96,$$

$$m_3 = 16, m_4 = 256,$$

$$m_5 = 512.$$