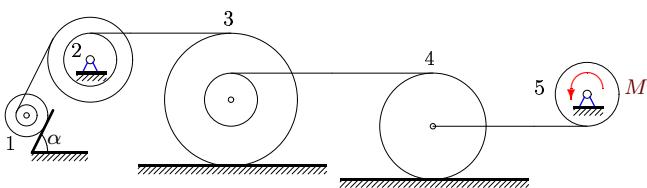


Кинетическая энергия системы. Приведенные массы

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)

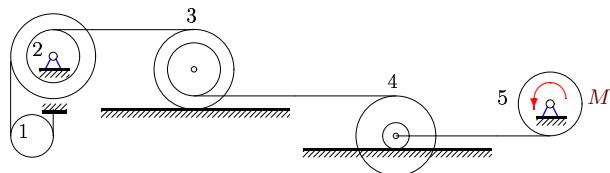
Задача D-33.1.



Алексеев P.O.

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 1, \\ R_2 &= 3, r_2 = 2, \rho_2 = 3, \\ R_3 &= 5, r_3 = 2, \rho_3 = 4, \\ R_4 &= 4, \\ m_1 &= 4, m_2 = 20, \\ m_3 &= 100, m_4 = 800, \\ m_5 &= 800. \end{aligned}$$

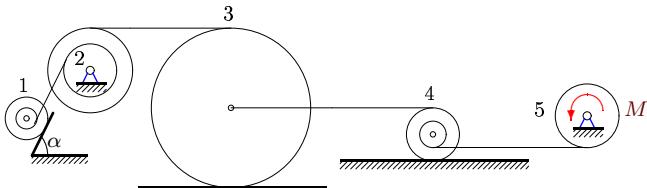
Задача D-33.2.



Ананьев А.Е.

$$\begin{aligned} R_2 &= 4, r_2 = 2, \rho_2 = 2, \\ R_3 &= 3, r_3 = 2, \rho_3 = 2, \\ R_4 &= 3, r_4 = 1, \rho_4 = 2, \\ m_1 &= 2, m_2 = 8, \\ m_3 &= 144, m_4 = 576, \\ m_5 &= 1152. \end{aligned}$$

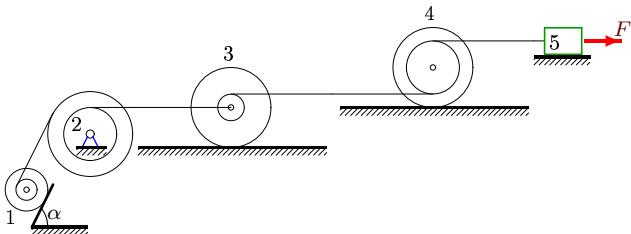
Задача D-33.3.



Арчаков А.Д.

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 1, \\ R_2 &= 4, r_2 = 2, \rho_2 = 3, \\ R_3 &= 6, \\ R_4 &= 2, r_4 = 1, \rho_4 = 1, \\ m_1 &= 4, m_2 = 96, \\ m_3 &= 32, m_4 = 192, \\ m_5 &= 128. \end{aligned}$$

Задача D-33.4.

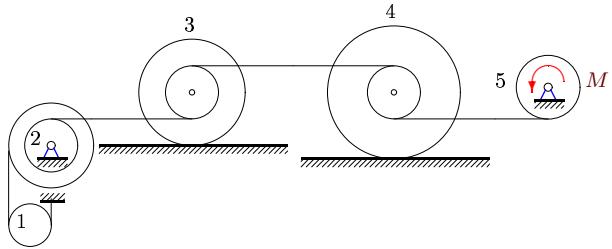


Бакленев Н.

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 1, \\ R_2 &= 3, r_2 = 2, \rho_2 = 3, \\ R_3 &= 3, r_3 = 1, \rho_3 = 2, \\ R_4 &= 3, r_4 = 2, \rho_4 = 2, \\ m_1 &= 12, m_2 = 4, \\ m_3 &= 54, m_4 = 9, \\ m_5 &= 9. \end{aligned}$$

Задача D-33.5.

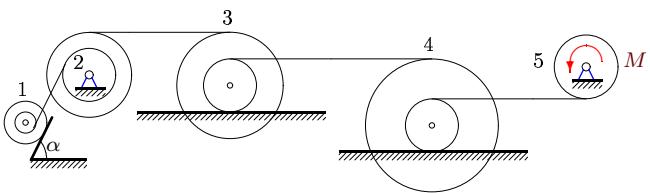
Болтунова В.О.



$$\begin{aligned}R_2 &= 4, r_2 = 2, \rho_2 = 3, \\R_3 &= 4, r_3 = 2, \rho_3 = 3, \\R_4 &= 5, r_4 = 2, \rho_4 = 4, \\m_1 &= 2, m_2 = 16, \\m_3 &= 16, m_4 = 49, \\m_5 &= 196.\end{aligned}$$

Задача D-33.6.

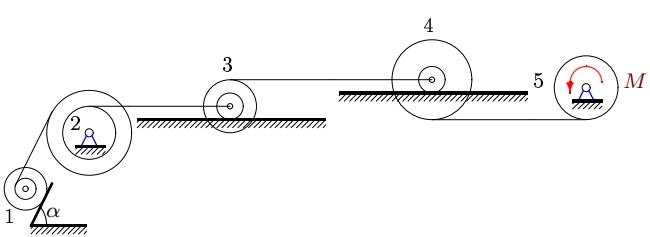
Васильева А.А.



$$\begin{aligned}R_1 &= 2, r_1 = 1, \rho_1 = 1, \\R_2 &= 4, r_2 = 2, \rho_2 = 2, \\R_3 &= 4, r_3 = 2, \rho_3 = 3, \\R_4 &= 5, r_4 = 2, \rho_4 = 4, \\m_1 &= 4, m_2 = 48, \\m_3 &= 144, m_4 = 441, \\m_5 &= 882.\end{aligned}$$

Задача D-33.7.

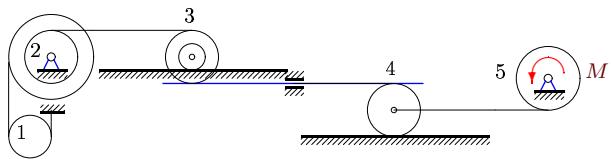
Видякин Б.Г.



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

Задача D-33.8.

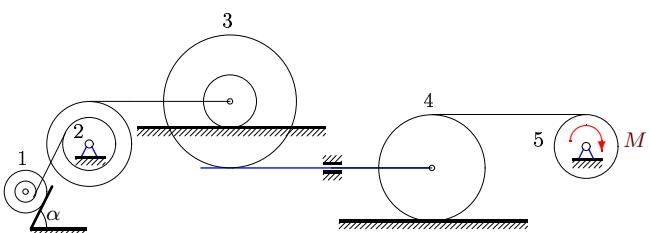
Воробьевса Д.



$$\begin{aligned}R_2 &= 4, r_2 = 2, \rho_2 = 3, \\R_3 &= 2, r_3 = 1, \rho_3 = 1, \\R_4 &= 2, \\m_1 &= 2, m_2 = 24, \\m_3 &= 36, m_4 = 72, \\m_5 &= 144.\end{aligned}$$

Задача D-33.9.

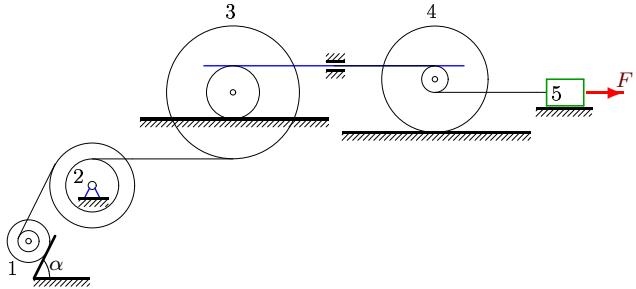
Гарм Е.А.



$$\begin{aligned}R_1 &= 2, r_1 = 1, \rho_1 = 1, \\R_2 &= 4, r_2 = 2, \rho_2 = 3, \\R_3 &= 5, r_3 = 2, \rho_3 = 4, \\R_4 &= 4, \\m_1 &= 4, m_2 = 32, \\m_3 &= 4, m_4 = 24, \\m_5 &= 4.\end{aligned}$$

Задача D-33.10.

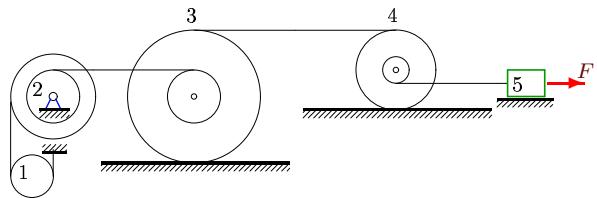
Гурьева Т.В.



$$\begin{aligned}R_1 &= 2, r_1 = 1, \rho_1 = 1, \\R_2 &= 3, r_2 = 2, \rho_2 = 3, \\R_3 &= 5, r_3 = 2, \rho_3 = 4, \\R_4 &= 4, r_4 = 1, \rho_4 = 3, \\m_1 &= 4, m_2 = 16, \\m_3 &= 36, m_4 = 27, \\m_5 &= 50.\end{aligned}$$

Задача D-33.11.

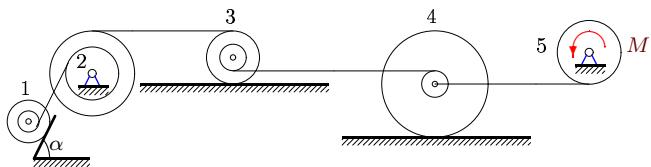
Дронов С.А.



$$\begin{aligned}R_2 &= 4, r_2 = 2, \rho_2 = 3, \\R_3 &= 5, r_3 = 2, \rho_3 = 4, \\R_4 &= 3, r_4 = 1, \rho_4 = 2, \\m_1 &= 2, m_2 = 8, \\m_3 &= 196, m_4 = 441, \\m_5 &= 441.\end{aligned}$$

Задача D-33.12.

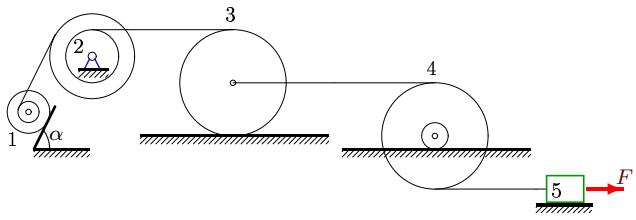
Зыков А.



$$\begin{aligned}R_1 &= 2, r_1 = 1, \rho_1 = 2, \\R_2 &= 4, r_2 = 2, \rho_2 = 3, \\R_3 &= 2, r_3 = 1, \rho_3 = 1, \\R_4 &= 4, r_4 = 1, \rho_4 = 3, \\m_1 &= 4, m_2 = 64, \\m_3 &= 64, m_4 = 48, \\m_5 &= 100.\end{aligned}$$

Задача D-33.13.

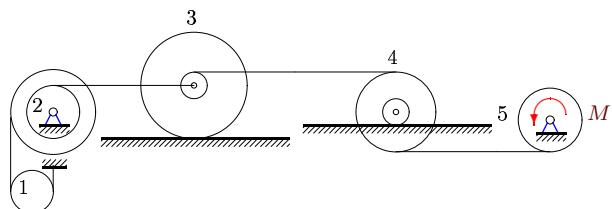
Касимов Д.Р.



$$\begin{aligned}R_1 &= 2, r_1 = 1, \rho_1 = 2, \\R_2 &= 3, r_2 = 2, \rho_2 = 2, \\R_3 &= 4, \\R_4 &= 4, r_4 = 1, \rho_4 = 3, \\m_1 &= 4, m_2 = 12, \\m_3 &= 32, m_4 = 30, \\m_5 &= 100.\end{aligned}$$

Задача D-33.14.

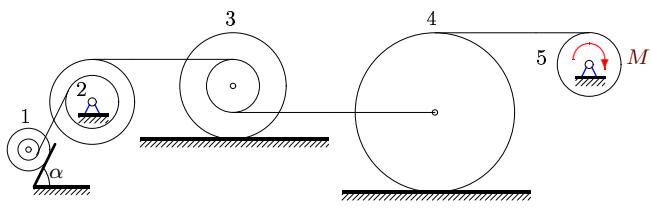
Ковалчук Б



$$\begin{aligned}R_2 &= 4, r_2 = 2, \rho_2 = 2, \\R_3 &= 4, r_3 = 1, \rho_3 = 3, \\R_4 &= 3, r_4 = 1, \rho_4 = 2, \\m_1 &= 2, m_2 = 20, \\m_3 &= 64, m_4 = 256, \\m_5 &= 128.\end{aligned}$$

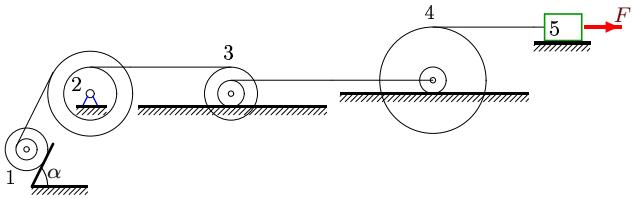
Задача D-33.15.

Косенок Д.А.



$$\begin{aligned}R_1 &= 2, r_1 = 1, \rho_1 = 1, \\R_2 &= 4, r_2 = 2, \rho_2 = 3, \\R_3 &= 4, r_3 = 2, \rho_3 = 3, \\R_4 &= 6, \\m_1 &= 4, m_2 = 64, \\m_3 &= 144, m_4 = 18, \\m_5 &= 36.\end{aligned}$$

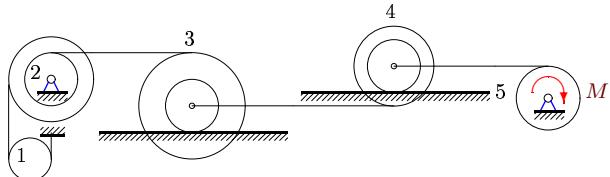
Задача D-33.16.



Лукъянов Л.М.

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 2, \\ R_2 &= 3, r_2 = 2, \rho_2 = 2, \\ R_3 &= 2, r_3 = 1, \rho_3 = 1, \\ R_4 &= 4, r_4 = 1, \rho_4 = 3, \\ m_1 &= 4, m_2 = 16, \\ m_3 &= 36, m_4 = 27, \\ m_5 &= 18. \end{aligned}$$

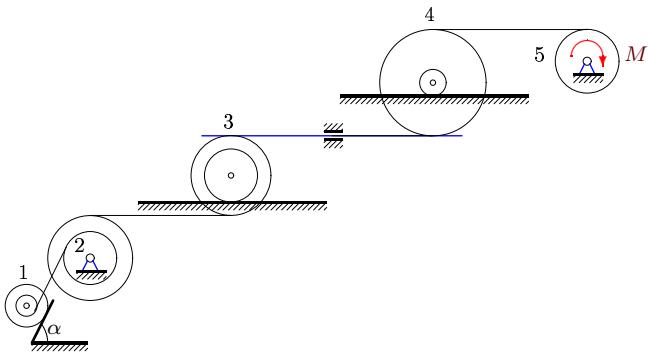
Задача D-33.17.



Моргун Е.Б.

$$\begin{aligned} R_2 &= 4, r_2 = 2, \rho_2 = 2, \\ R_3 &= 4, r_3 = 2, \rho_3 = 3, \\ R_4 &= 3, r_4 = 2, \rho_4 = 2, \\ m_1 &= 8, m_2 = 4, \\ m_3 &= 252, m_4 = 54, \\ m_5 &= 90. \end{aligned}$$

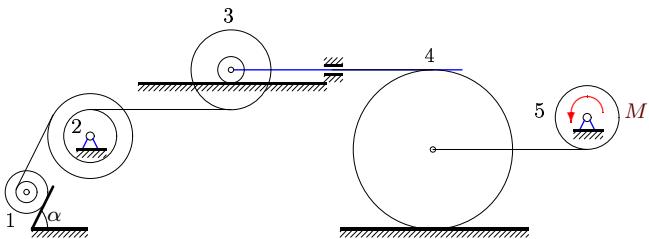
Задача D-33.18.



Павлова Е.А.

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 2, \\ R_2 &= 4, r_2 = 2, \rho_2 = 2, \\ R_3 &= 3, r_3 = 2, \rho_3 = 2, \\ R_4 &= 4, r_4 = 1, \rho_4 = 3, \\ m_1 &= 4, m_2 = 64, \\ m_3 &= 4, m_4 = 9, \\ m_5 &= 18. \end{aligned}$$

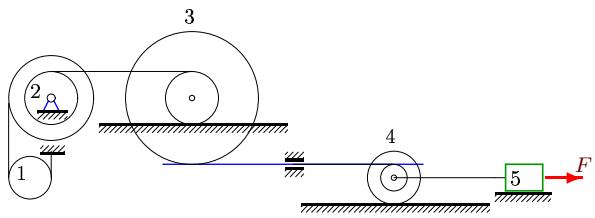
Задача D-33.19.



Панфилов К.

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 1, \\ R_2 &= 3, r_2 = 2, \rho_2 = 3, \\ R_3 &= 3, r_3 = 1, \rho_3 = 2, \\ R_4 &= 6, \\ m_1 &= 4, m_2 = 12, \\ m_3 &= 16, m_4 = 96, \\ m_5 &= 64. \end{aligned}$$

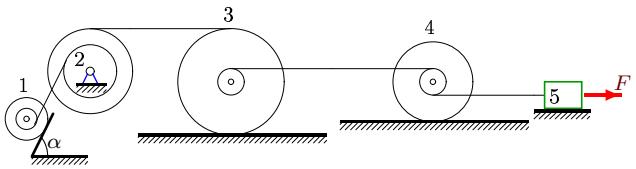
Задача D-33.20.



Плетнёва Е. А.

$$\begin{aligned} R_2 &= 4, r_2 = 2, \rho_2 = 3, \\ R_3 &= 5, r_3 = 2, \rho_3 = 4, \\ R_4 &= 2, r_4 = 1, \rho_4 = 1, \\ m_1 &= 2, m_2 = 4, \\ m_3 &= 16, m_4 = 48, \\ m_5 &= 8. \end{aligned}$$

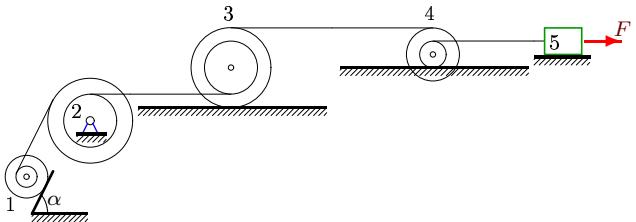
Задача D-33.21.



Пономарева А.

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 1, \\ R_2 &= 4, r_2 = 2, \rho_2 = 3, \\ R_3 &= 4, r_3 = 1, \rho_3 = 3, \\ R_4 &= 3, r_4 = 1, \rho_4 = 2, \\ m_1 &= 4, m_2 = 32, \\ m_3 &= 256, m_4 = 1024, \\ m_5 &= 256. \end{aligned}$$

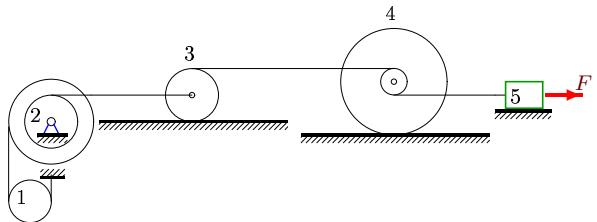
Задача D-33.22.



Пузин М. О.

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

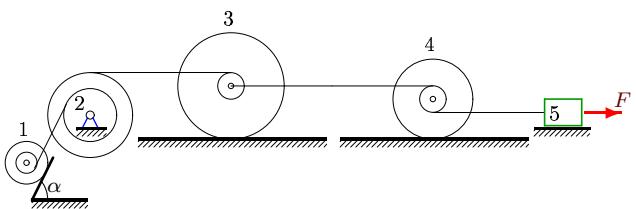
Задача D-33.23.



Рассолов А.

$$\begin{aligned} R_2 &= 4, r_2 = 2, \rho_2 = 3, \\ R_3 &= 2, \\ R_4 &= 4, r_4 = 1, \rho_4 = 3, \\ m_1 &= 10, m_2 = 12, \\ m_3 &= 16, m_4 = 7, \\ m_5 &= 150. \end{aligned}$$

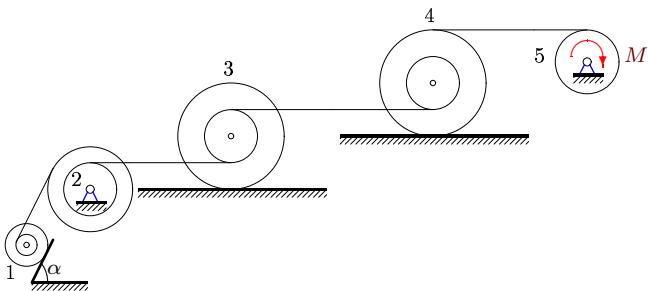
Задача D-33.24.



Рябов М.Н.

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 1, \\ R_2 &= 4, r_2 = 2, \rho_2 = 3, \\ R_3 &= 4, r_3 = 1, \rho_3 = 3, \\ R_4 &= 3, r_4 = 1, \rho_4 = 2, \\ m_1 &= 12, m_2 = 32, \\ m_3 &= 6, m_4 = 125, \\ m_5 &= 100. \end{aligned}$$

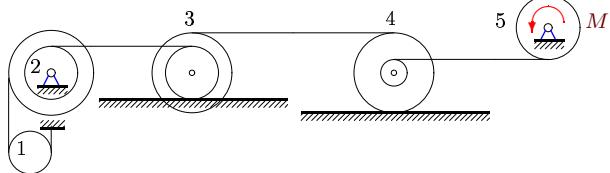
Задача D-33.25.



Санко П. А.

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

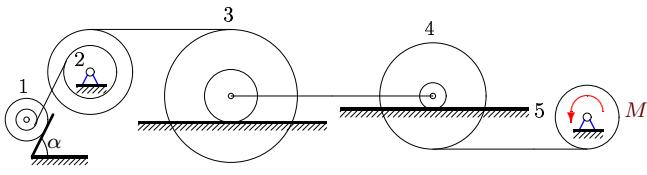
Задача D-33.26.



Солдаткин Л.И.

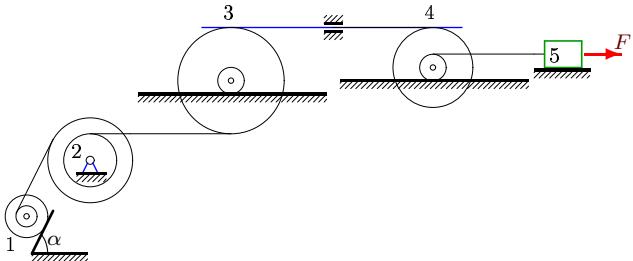
$$\begin{aligned} R_2 &= 4, r_2 = 2, \rho_2 = 3, \\ R_3 &= 3, r_3 = 2, \rho_3 = 2, \\ R_4 &= 3, r_4 = 1, \rho_4 = 2, \\ m_1 &= 2, m_2 = 8, \\ m_3 &= 8, m_4 = 576, \\ m_5 &= 144. \end{aligned}$$

Задача D-33.27.



Софроницкий А.П.
 $R_1 = 2, r_1 = 1, \rho_1 = 1,$
 $R_2 = 4, r_2 = 2, \rho_2 = 2,$
 $R_3 = 5, r_3 = 2, \rho_3 = 4,$
 $R_4 = 4, r_4 = 1, \rho_4 = 3,$
 $m_1 = 8, m_2 = 64,$
 $m_3 = 245, m_4 = 196,$
 $m_5 = 294.$

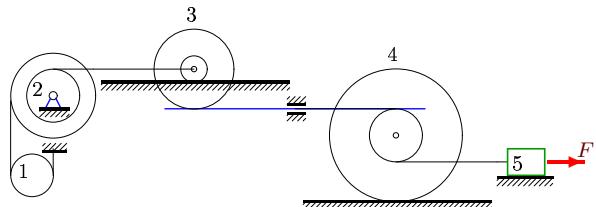
Задача D-33.28.



Сохина Н. М.

$R_1 = 2, r_1 = 1, \rho_1 = 1,$
 $R_2 = 3, r_2 = 2, \rho_2 = 2,$
 $R_3 = 4, r_3 = 1, \rho_3 = 3,$
 $R_4 = 3, r_4 = 1, \rho_4 = 2,$
 $m_1 = 20, m_2 = 8,$
 $m_3 = 72, m_4 = 144,$
 $m_5 = 216.$

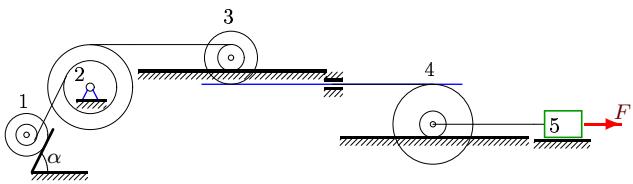
Задача D-33.29.



Терлецкий А. С.

$R_2 = 4, r_2 = 2, \rho_2 = 3,$
 $R_3 = 3, r_3 = 1, \rho_3 = 2,$
 $R_4 = 5, r_4 = 2, \rho_4 = 4,$
 $m_1 = 2, m_2 = 12,$
 $m_3 = 4, m_4 = 49,$
 $m_5 = 98.$

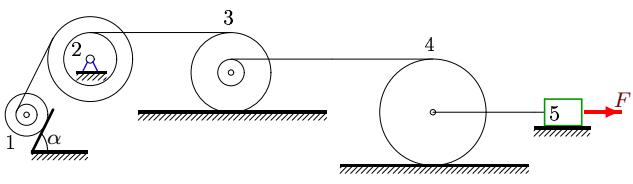
Задача D-33.30.



Умрихин А.Ю

$R_1 = 2, r_1 = 1, \rho_1 = 2,$
 $R_2 = 4, r_2 = 2, \rho_2 = 2,$
 $R_3 = 2, r_3 = 1, \rho_3 = 1,$
 $R_4 = 3, r_4 = 1, \rho_4 = 2,$
 $m_1 = 12, m_2 = 32,$
 $m_3 = 12, m_4 = 320,$
 $m_5 = 256.$

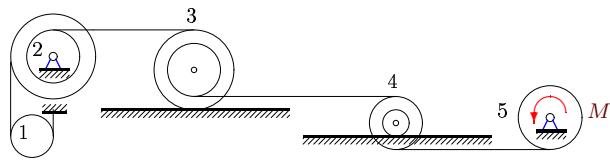
Задача D-33.31.



Филиппов А.С.

$R_1 = 2, r_1 = 1, \rho_1 = 1,$
 $R_2 = 3, r_2 = 2, \rho_2 = 3,$
 $R_3 = 3, r_3 = 1, \rho_3 = 2,$
 $R_4 = 4,$
 $m_1 = 20, m_2 = 8,$
 $m_3 = 288, m_4 = 42,$
 $m_5 = 54.$

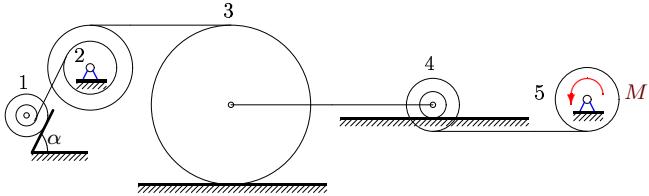
Задача D-33.32.



Финогенова Е.М.

$R_2 = 4, r_2 = 2, \rho_2 = 2,$
 $R_3 = 3, r_3 = 2, \rho_3 = 2,$
 $R_4 = 2, r_4 = 1, \rho_4 = 1,$
 $m_1 = 4, m_2 = 24,$
 $m_3 = 180, m_4 = 162,$
 $m_5 = 648.$

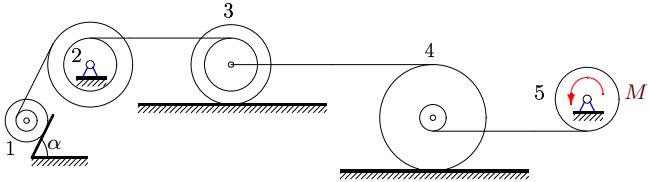
Задача D-33.33.



Фоломкин М.А.

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 1, \\ R_2 &= 4, r_2 = 2, \rho_2 = 2, \\ R_3 &= 6, \\ R_4 &= 2, r_4 = 1, \rho_4 = 1, \\ m_1 &= 4, m_2 = 16, \\ m_3 &= 32, m_4 = 6, \\ m_5 &= 16. \end{aligned}$$

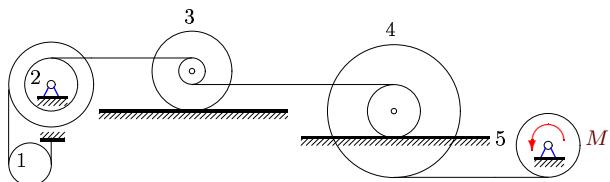
Задача D-33.34.



Цымбалиюк А.

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 2, \\ R_2 &= 3, r_2 = 2, \rho_2 = 3, \\ R_3 &= 3, r_3 = 2, \rho_3 = 2, \\ R_4 &= 4, r_4 = 1, \rho_4 = 3, \\ m_1 &= 4, m_2 = 12, \\ m_3 &= 100, m_4 = 192, \\ m_5 &= 3200. \end{aligned}$$

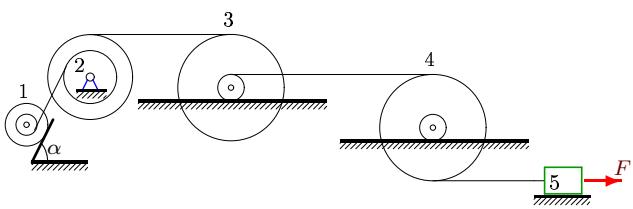
Задача D-33.35.



Чумаченко Н.Д.

$$\begin{aligned} R_2 &= 4, r_2 = 2, \rho_2 = 2, \\ R_3 &= 3, r_3 = 1, \rho_3 = 2, \\ R_4 &= 5, r_4 = 2, \rho_4 = 4, \\ m_1 &= 2, m_2 = 16, \\ m_3 &= 64, m_4 = 48, \\ m_5 &= 128. \end{aligned}$$

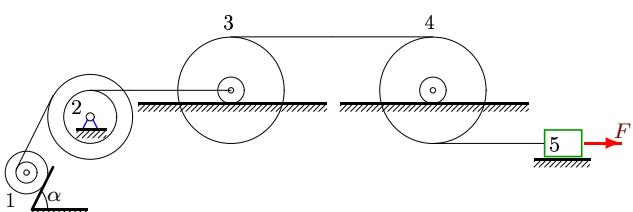
Задача D-33.36.



Шаталов А.Б.

$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 1, \\ R_2 &= 4, r_2 = 2, \rho_2 = 2, \\ R_3 &= 4, r_3 = 1, \rho_3 = 3, \\ R_4 &= 4, r_4 = 1, \rho_4 = 3, \\ m_1 &= 4, m_2 = 64, \\ m_3 &= 20, m_4 = 125, \\ m_5 &= 625. \end{aligned}$$

Задача D-33.37.

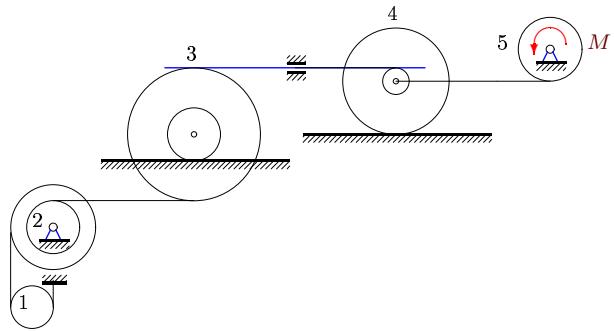


Шевдков Д.М.

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

Задача D-33.38.

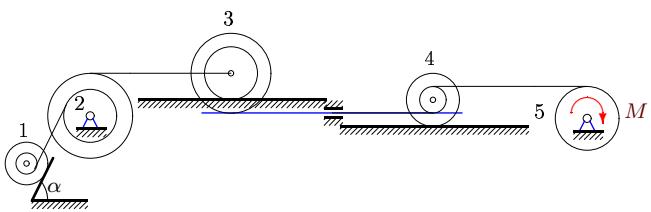
Шмелев Д.О.



$$\begin{aligned} R_2 &= 4, r_2 = 2, \rho_2 = 3, \\ R_3 &= 5, r_3 = 2, \rho_3 = 4, \\ R_4 &= 4, r_4 = 1, \rho_4 = 3, \\ m_1 &= 2, m_2 = 16, \\ m_3 &= 36, m_4 = 27, \\ m_5 &= 450. \end{aligned}$$

Задача D-33.39.

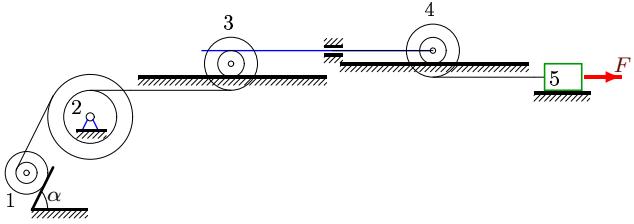
Щербинина А.К.



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

Задача D-33.40.

Щур В.С.



$$\begin{aligned} R_1 &= 2, r_1 = 1, \rho_1 = 2, \\ R_2 &= 3, r_2 = 2, \rho_2 = 2, \\ R_3 &= 2, r_3 = 1, \rho_3 = 1, \\ R_4 &= 2, r_4 = 1, \rho_4 = 1, \\ m_1 &= 20, m_2 = 4, \\ m_3 &= 8, m_4 = 7, \\ m_5 &= 6. \end{aligned}$$

D-33

Ответы.

Кинетическая энергия системы. Приведенные массы 29-

Nov-17

№	μ_1	μ_2	μ_3	μ_4	μ_5	$\sum \mu_k$	
1	5	45	41	147	49	287	Алексеев Р.О.
2	3	8	52	5	1	69	Ананьев А.Е.
3	5	54	12	15	1	87	Арчаков А.Д.
4	15	9	78	208	400	710	Бакленев Н.
5	3	36	100	369	162	670	Болтунова В.О.
6	5	12	52	80	64	213	Васильева А. А.
7	8	20	8	135	72	243	Видякин В.Г.
8	3	54	8	3	2	70	Воробьева Д.
9	5	18	20	81	18	142	Гарт Е.А.
10	5	36	80	48	32	201	Гурьева Т.В.
11	3	18	164	325	100	610	Дронов С.А.
12	8	36	20	3	2	69	Зыков А.
13	8	12	12	3	9	44	Касимов Д.Р.
14	3	20	100	125	25	273	Ковальчук В
15	5	36	100	3	8	152	Косенок Д.А.
16	8	16	8	120	200	352	Лукьянов Л.М.
17	12	4	91	48	20	175	Моргун Е.В.
18	8	16	32	250	625	931	Павлова Е.А.
19	5	27	20	9	2	63	Панфилов К.
20	3	9	20	15	2	49	Плетнева Е. А.
21	5	18	100	325	25	473	Пономарева А.
22	8	24	52	24	32	140	Пузин М. О.
23	15	27	24	28	216	310	Рассолов А.
24	15	18	6	65	16	120	Рябов М.Н.
25	5	18	100	225	144	492	Сапко П. А.
26	3	18	4	325	50	400	Солдаткин Л.И.
27	10	16	100	160	108	394	Софроницкий А.П.
28	25	8	80	125	150	388	Сохина Н. М.
29	3	27	20	164	72	286	Терлецкий А.С.
30	24	8	6	25	4	67	Умрихин А.Ю
31	25	18	104	7	6	160	Филиппов А.С.
32	6	24	65	1	1	97	Финогенова Е.М.
33	5	4	12	3	2	26	Фоломкин М.А.
34	8	27	52	27	81	195	Цымбалюк А.
35	3	16	52	15	9	95	Чумаченко Н. Д.
36	5	16	8	8	36	73	Шаталов А. В.
37	5	12	40	30	18	105	Швыдков Д. М.
38	3	36	80	147	784	1050	Шмелев Д.О.
39	8	9	8	15	18	58	Щербинина А.К.
40	40	4	16	56	24	140	Щур В.С.