

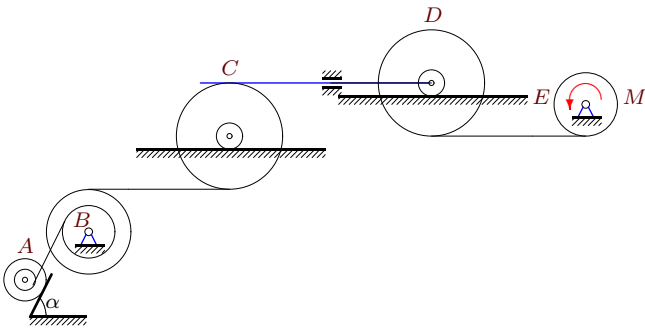
Кинетическая энергия системы. Приведенные массы

Механическая система, состоящая из пяти тел A, B, C, D и E , движется под действием внешних сил. Заданы радиусы цилиндров и блоков. Радиусы инерции 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 $T = \mu v_A^2/2$, где v_A — скорость груза A (или центра цилиндра A).

Кирсанов М.Н. **Решбник. Теоретическая механика**/Под ред. А. И. Кириллова.— М.: ФИЗМАТЛИТ, 2008. — 384 с. (с.257.)

Задача D33.1.

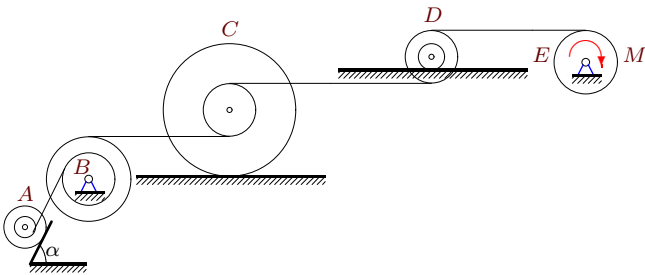
Анисимова Полина



$$\begin{aligned} R_A &= 2, r_A = 1, i_A = 1, \\ R_B &= 4, r_B = 2, i_B = 2, \\ R_C &= 4, r_C = 1, i_C = 3, \\ R_D &= 4, r_D = 1, i_D = 3, \\ m_A &= 16, m_B = 48, \\ m_C &= 63, m_D = 9, \\ m_E &= 10. \end{aligned}$$

Задача D33.2.

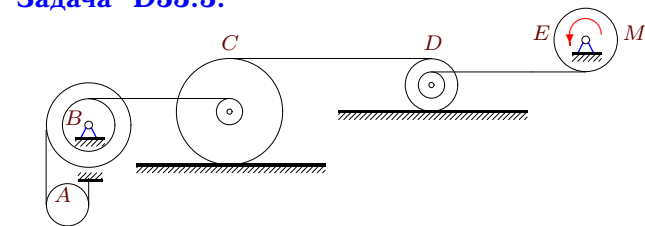
Анохин Дмитрий



$$\begin{aligned} R_A &= 2, r_A = 1, i_A = 1, \\ R_B &= 4, r_B = 2, i_B = 2, \\ R_C &= 5, r_C = 2, i_C = 4, \\ R_D &= 2, r_D = 1, i_D = 1, \\ m_A &= 20, m_B = 16, \\ m_C &= 72, m_D = 63, \\ m_E &= 12. \end{aligned}$$

Задача D33.3.

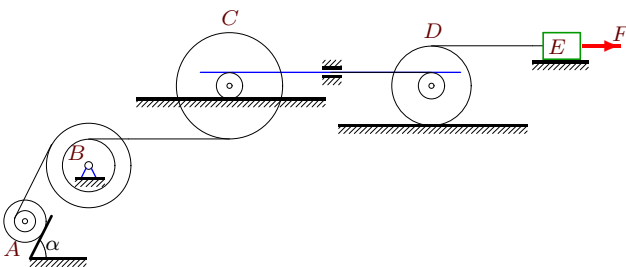
Арефьева Катя



$$\begin{aligned} R_B &= 4, r_B = 2, i_B = 3, \\ R_C &= 4, r_C = 1, i_C = 3, \\ R_D &= 2, r_D = 1, i_D = 1, \\ m_A &= 6, m_B = 4, \\ m_C &= 6, m_D = 25, \\ m_E &= 200. \end{aligned}$$

Задача D33.4.

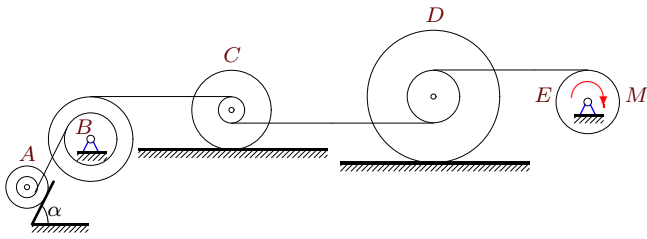
Васильев Владислав



$$\begin{aligned} R_A &= 2, r_A = 1, i_A = 1, \\ R_B &= 3, r_B = 2, i_B = 3, \\ R_C &= 4, r_C = 1, i_C = 3, \\ R_D &= 3, r_D = 1, i_D = 2, \\ m_A &= 8, m_B = 8, \\ m_C &= 45, m_D = 144, \\ m_E &= 3. \end{aligned}$$

Задача D33.5.

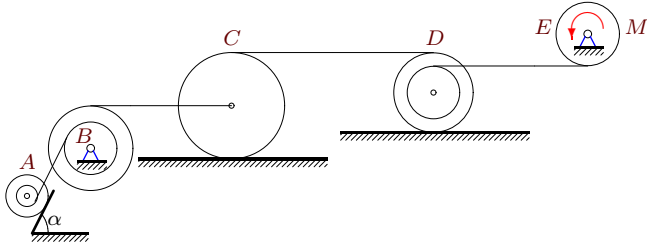
Гарифов Руслан



$$\begin{aligned}
 R_A &= 2, r_A = 1, i_A = 1, \\
 R_B &= 4, r_B = 2, i_B = 3, \\
 R_C &= 3, r_C = 1, i_C = 2, \\
 R_D &= 5, r_D = 2, i_D = 4, \\
 m_A &= 4, m_B = 64, \\
 m_C &= 64, m_D = 108, \\
 m_E &= 144.
 \end{aligned}$$

Задача D33.6.

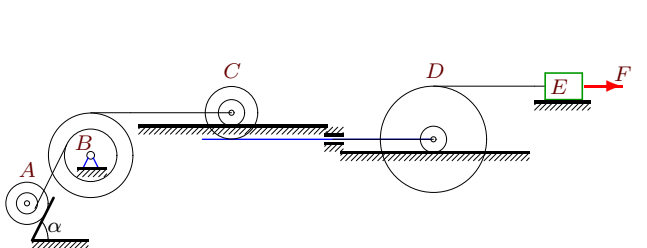
Глаголева Алена



$$\begin{aligned}
 R_A &= 2, r_A = 1, i_A = 1, \\
 R_B &= 4, r_B = 2, i_B = 3, \\
 R_C &= 4, \\
 R_D &= 3, r_D = 2, i_D = 2, \\
 m_A &= 4, m_B = 16, \\
 m_C &= 8, m_D = 27, \\
 m_E &= 36.
 \end{aligned}$$

Задача D33.7.

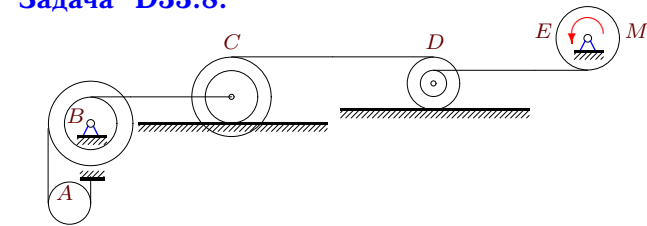
Ефимов Костя



$$\begin{aligned}
 R_A &= 2, r_A = 1, i_A = 2, \\
 R_B &= 4, r_B = 2, i_B = 2, \\
 R_C &= 2, r_C = 1, i_C = 1, \\
 R_D &= 4, r_D = 1, i_D = 3, \\
 m_A &= 20, m_B = 48, \\
 m_C &= 8, m_D = 7, \\
 m_E &= 6.
 \end{aligned}$$

Задача D33.8.

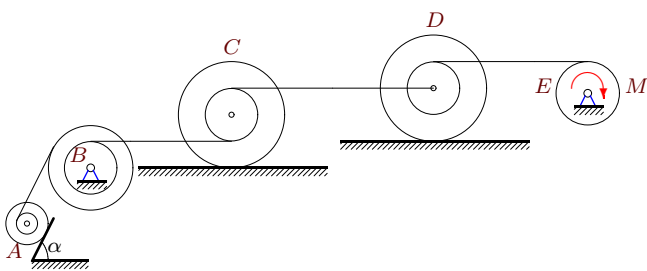
Завидный Антон



$$\begin{aligned}
 R_B &= 4, r_B = 2, i_B = 3, \\
 R_C &= 3, r_C = 2, i_C = 2, \\
 R_D &= 2, r_D = 1, i_D = 1, \\
 m_A &= 2, m_B = 24, \\
 m_C &= 4, m_D = 64, \\
 m_E &= 128.
 \end{aligned}$$

Задача D33.9.

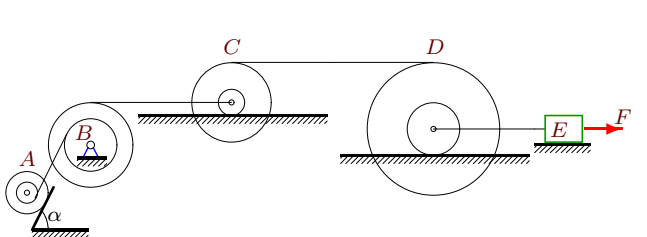
Колякина Лида



$$\begin{aligned}
 R_A &= 2, r_A = 1, i_A = 1, \\
 R_B &= 3, r_B = 2, i_B = 3, \\
 R_C &= 4, r_C = 2, i_C = 3, \\
 R_D &= 4, r_D = 2, i_D = 3, \\
 m_A &= 16, m_B = 8, \\
 m_C &= 28, m_D = 16, \\
 m_E &= 40.
 \end{aligned}$$

Задача D33.10.

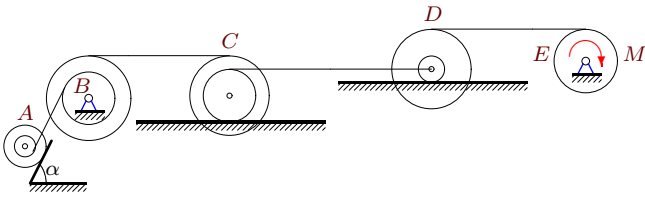
Масленков Антон



$$\begin{aligned}
 R_A &= 2, r_A = 1, i_A = 1, \\
 R_B &= 4, r_B = 2, i_B = 2, \\
 R_C &= 3, r_C = 1, i_C = 2, \\
 R_D &= 5, r_D = 2, i_D = 4, \\
 m_A &= 16, m_B = 48, \\
 m_C &= 7, m_D = 49, \\
 m_E &= 245.
 \end{aligned}$$

Задача D33.11.

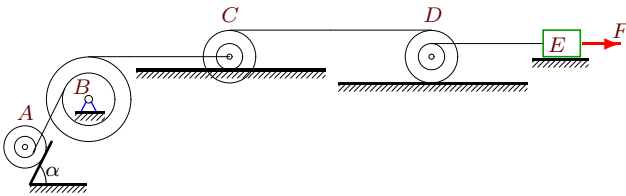
Павлов Роман



$$\begin{aligned}
 R_A &= 2, r_A = 1, i_A = 2, \\
 R_B &= 4, r_B = 2, i_B = 2, \\
 R_C &= 3, r_C = 2, i_C = 2, \\
 R_D &= 3, r_D = 1, i_D = 2, \\
 m_A &= 20, m_B = 32, \\
 m_C &= 200, m_D = 35, \\
 m_E &= 50.
 \end{aligned}$$

Задача D33.12.

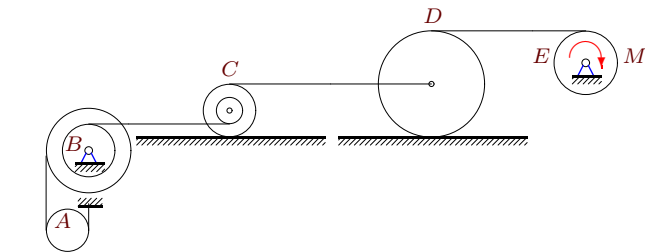
Пай Артем



$$\begin{aligned}
 R_A &= 2, r_A = 1, i_A = 2, \\
 R_B &= 4, r_B = 2, i_B = 3, \\
 R_C &= 2, r_C = 1, i_C = 1, \\
 R_D &= 2, r_D = 1, i_D = 1, \\
 m_A &= 12, m_B = 96, \\
 m_C &= 6, m_D = 80, \\
 m_E &= 64.
 \end{aligned}$$

Задача D33.13.

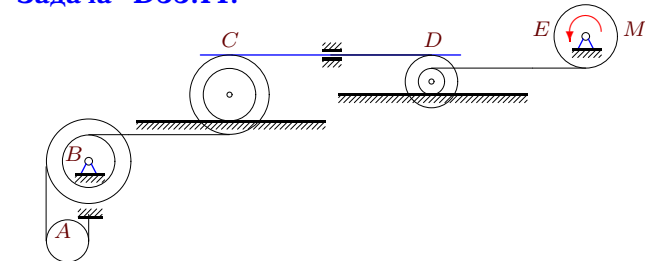
Попов Иван



$$\begin{aligned}
 R_B &= 4, r_B = 2, i_B = 3, \\
 R_C &= 2, r_C = 1, i_C = 1, \\
 R_D &= 4, \\
 m_A &= 2, m_B = 12, \\
 m_C &= 4, m_D = 3, \\
 m_E &= 4.
 \end{aligned}$$

Задача D33.14.

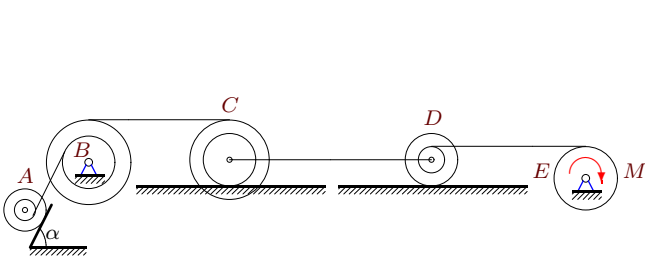
Размазин Александр



$$\begin{aligned}
 R_B &= 4, r_B = 2, i_B = 2, \\
 R_C &= 3, r_C = 2, i_C = 2, \\
 R_D &= 2, r_D = 1, i_D = 1, \\
 m_A &= 2, m_B = 24, \\
 m_C &= 4, m_D = 27, \\
 m_E &= 36.
 \end{aligned}$$

Задача D33.15.

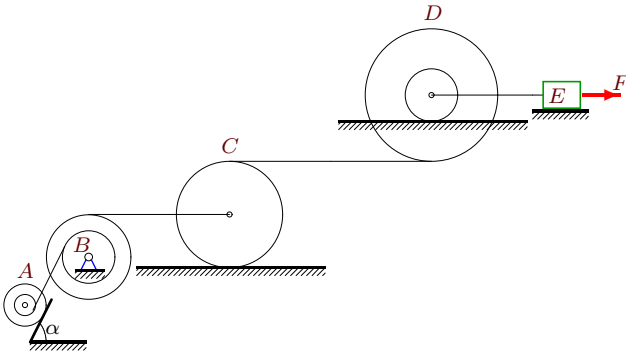
Руднев Никита



$$\begin{aligned}
 R_A &= 2, r_A = 1, i_A = 2, \\
 R_B &= 4, r_B = 2, i_B = 3, \\
 R_C &= 3, r_C = 2, i_C = 2, \\
 R_D &= 2, r_D = 1, i_D = 1, \\
 m_A &= 8, m_B = 96, \\
 m_C &= 125, m_D = 20, \\
 m_E &= 150.
 \end{aligned}$$

Задача D33.16.

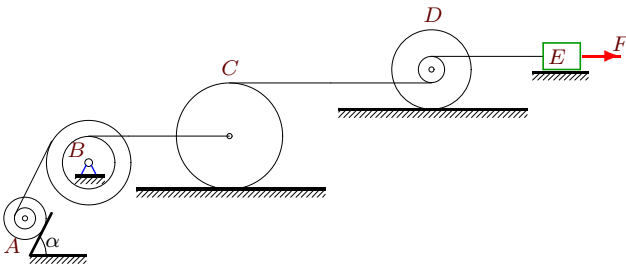
Светушков Алексей



$$\begin{aligned}
 R_A &= 2, r_A = 1, i_A = 1, \\
 R_B &= 4, r_B = 2, i_B = 2, \\
 R_C &= 4, \\
 R_D &= 5, r_D = 2, i_D = 4, \\
 m_A &= 16, m_B = 48, \\
 m_C &= 14, m_D = 54, \\
 m_E &= 45.
 \end{aligned}$$

Задача D33.17.

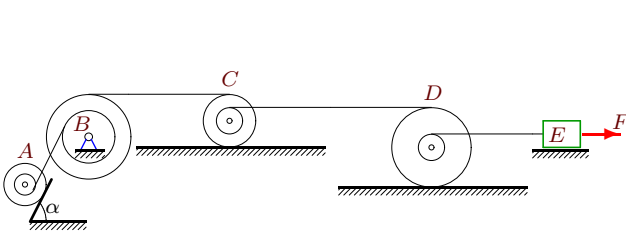
Степанишин Дмитрий



$$\begin{aligned}
 R_A &= 2, r_A = 1, i_A = 1, \\
 R_B &= 3, r_B = 2, i_B = 3, \\
 R_C &= 4, \\
 R_D &= 3, r_D = 1, i_D = 2, \\
 m_A &= 16, m_B = 8, \\
 m_C &= 14, m_D = 6, \\
 m_E &= 5.
 \end{aligned}$$

Задача D33.18.

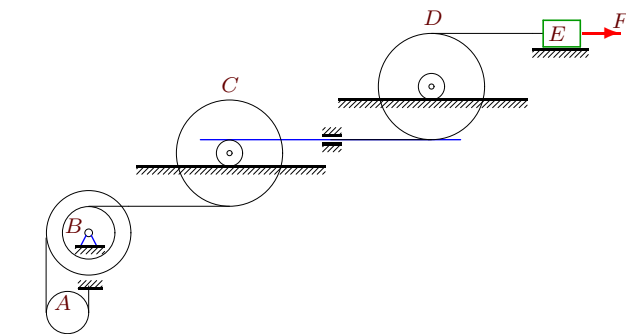
Ульянова Катя



$$\begin{aligned}
 R_A &= 2, r_A = 1, i_A = 2, \\
 R_B &= 4, r_B = 2, i_B = 3, \\
 R_C &= 2, r_C = 1, i_C = 1, \\
 R_D &= 3, r_D = 1, i_D = 2, \\
 m_A &= 8, m_B = 32, \\
 m_C &= 80, m_D = 256, \\
 m_E &= 12.
 \end{aligned}$$

Задача D33.19.

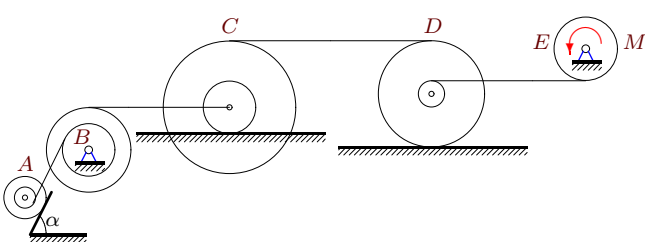
Фомин Владислав



$$\begin{aligned}
 R_B &= 4, r_B = 2, i_B = 2, \\
 R_C &= 4, r_C = 1, i_C = 3, \\
 R_D &= 4, r_D = 1, i_D = 3, \\
 m_A &= 6, m_B = 12, \\
 m_C &= 54, m_D = 405, \\
 m_E &= 324.
 \end{aligned}$$

Задача D33.20.

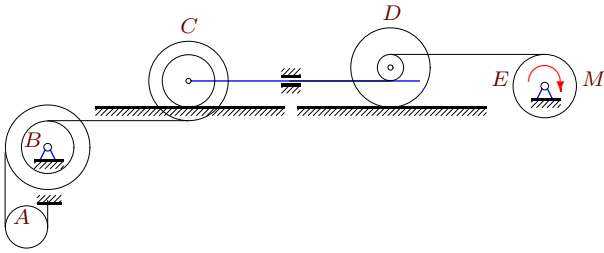
Харизин Роман



$$\begin{aligned}
 R_A &= 2, r_A = 1, i_A = 1, \\
 R_B &= 4, r_B = 2, i_B = 3, \\
 R_C &= 5, r_C = 2, i_C = 4, \\
 R_D &= 4, r_D = 1, i_D = 3, \\
 m_A &= 4, m_B = 64, \\
 m_C &= 4, m_D = 256, \\
 m_E &= 512.
 \end{aligned}$$

Задача D33.21.

Яременко Сергей



$$R_B = 4, r_B = 2, i_B = 3,$$

$$R_C = 3, r_C = 2, i_C = 2,$$

$$R_D = 3, r_D = 1, i_D = 2,$$

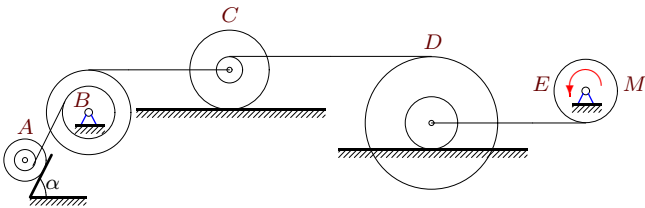
$$m_A = 2, m_B = 20,$$

$$m_C = 4, m_D = 3,$$

$$m_E = 4.$$

Задача D33.22.

Кишкин Евгений



$$R_A = 2, r_A = 1, i_A = 1,$$

$$R_B = 4, r_B = 2, i_B = 2,$$

$$R_C = 3, r_C = 1, i_C = 2,$$

$$R_D = 5, r_D = 2, i_D = 4,$$

$$m_A = 16, m_B = 64,$$

$$m_C = 63, m_D = 441,$$

$$m_E = 882.$$

D33 Ответы.

Кинетическая энергия системы. Приведенные массы 06.04.2012

№	μ_A	μ_B	μ_C	μ_D	μ_E	μ	
1	20	12	70	250	125	477	Анисимова Полина
2	25	4	328	686	294	1337	Анохин Дмитрий
3	9	9	6	20	144	188	Арефьева Катя
4	10	18	50	52	3	133	Васильев Владислав
5	5	36	52	123	98	314	Гарифов Руслан
6	5	9	12	39	50	115	Глаголева Алена
7	40	12	16	70	150	288	Ефимов Костя
8	3	54	8	125	225	415	Завидный Антон
9	20	18	175	225	405	843	Колякина Лида
10	20	12	35	320	320	707	Масленков Антон
11	40	8	64	112	256	480	Павлов Роман
12	24	54	12	225	324	639	Пай Артем
13	3	27	20	72	128	250	Попов Иван
14	3	24	32	150	200	409	Размазин Александр
15	16	54	40	4	27	141	Руднев Никита
16	20	12	21	480	80	613	Светушков Алексей
17	20	18	21	78	80	217	Степанишин Дмитрий
18	16	18	25	52	3	114	Ульянова Катя
19	9	12	60	200	400	681	Фомин Владислав
20	5	36	20	1225	1225	2511	Харизин Роман
21	3	45	32	39	32	151	Яременко Сергей
22	20	16	91	320	64	511	Кишкин Евгений