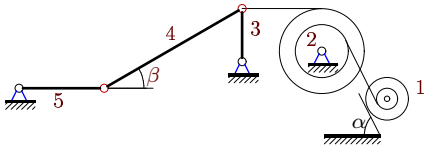
Кинетическая энергия системы. Приведенные массы

Механическая система, состоящая из пяти тел, движется под действием внешних сил. Заданы радиусы цилиндров, блоков и длины стержней. Радиусы инерции даны для блоков, цилиндры и стержни считать однородными. Массы даны в килограммах, радиусы — в сантиметрах. Стержни, направления которых в данный момент не указаны, считать вертикальными и горизонтальными. Вычислить приведенную массу системы μ в формуле $T = \mu v_1^2/2$, где v_1 — скорость груза 1 или центра цилиндра (блока) 1.

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

Задача D-33.1.

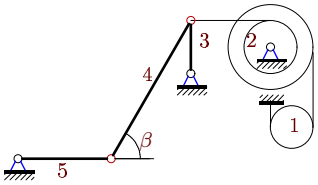
113



$R_1 = 2$, $r_1 = 1$, $i_1 = 2$, $R_2 = 4$, $r_2 = 2$, $i_2 = 2$, $m_1 = 16$, $m_2 = 48$, $m_3 = 12$, $m_4 = 18$, $m_5 = 27$, $\beta = 30°$.

Задача D-33.2.

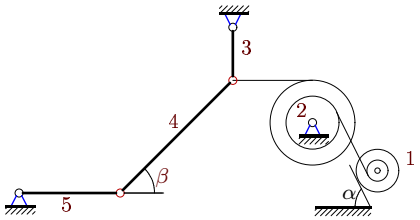
113



$R_2 = 4$, $r_2 = 2$, $i_2 = 3$, $m_1 = 2$, $m_2 = 8$, $m_3 = 3$, $m_4 = 9$, $m_5 = 18$, $\beta = 60°$.

Задача D-33.3.

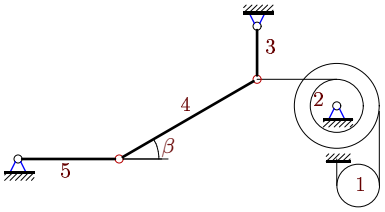
113



$R_1 = 2$, $r_1 = 1$, $i_1 = 1$, $R_2 = 4$, $r_2 = 2$, $i_2 = 3$, $m_1 = 12$, $m_2 = 16$, $m_3 = 9$, $m_4 = 18$, $m_5 = 9$, $\beta = 45°$.

Задача D-33.4.

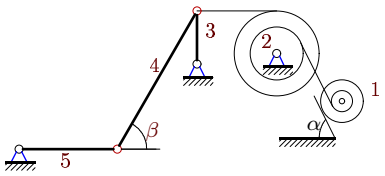
113



$R_2 = 4$, $r_2 = 2$, $i_2 = 2$, $m_1 = 2$, $m_2 = 8$, $m_3 = 3$, $m_4 = 9$, $m_5 = 18$, $\beta = 30°$.

Задача D-33.5.

113



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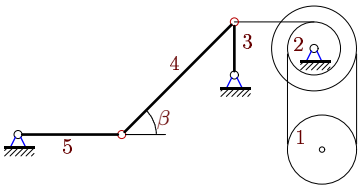
Задача D-33.6.

113



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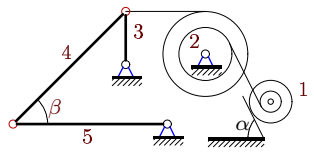
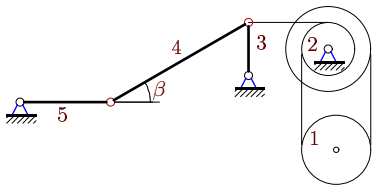
Задача D-33.7.



$R_1 = 2$, $r_1 = 1$, $i_1 = 1$, $R_2 = 4$, $r_2 = 2$, $i_2 = 2$, $m_1 = 4$, $m_2 = 48$, $m_3 = 3$, $m_4 = 27$, $m_5 = 27$, $\beta = 45°$.

Задача D-33.8.



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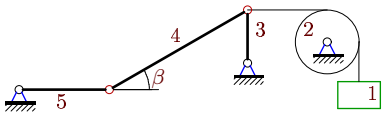
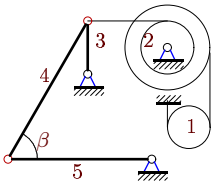
Задача D-33.9.



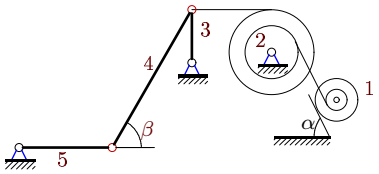
$m_1 = 10$, $m_2 = 2$, $m_3 = 3$, $m_4 = 27$, $m_5 = 9$, $\beta = 30°$.

Задача D-33.10.



$R_2 = 4$, $r_2 = 2$, $i_2 = 2$, $m_1 = 2$, $m_2 = 4$, $m_3 = 3$, $m_4 = 18$, $m_5 = 9$, $\beta = 60°$.

Задача D-33.11.



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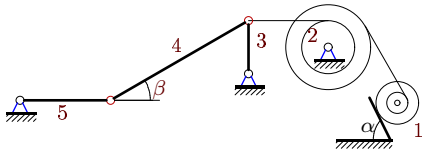
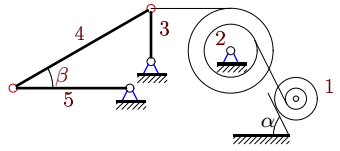
Задача D-33.12.



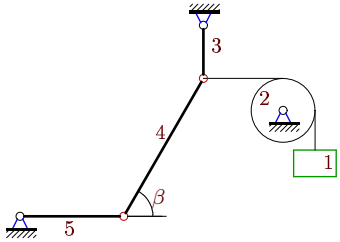
$R_1 = 2$, $r_1 = 1$, $i_1 = 2$, $R_2 = 3$, $r_2 = 2$, $i_2 = 3$, $m_1 = 4$, $m_2 = 16$, $m_3 = 3$, $m_4 = 27$, $m_5 = 9$, $\beta = 30°$.

Задача D-33.13.



$R_1 = 2$, $r_1 = 1$, $i_1 = 2$, $R_2 = 4$, $r_2 = 2$, $i_2 = 3$, $m_1 = 4$, $m_2 = 48$, $m_3 = 3$, $m_4 = 27$, $m_5 = 27$, $\beta = 30°$.

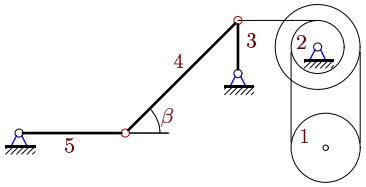
Задача D-33.14.



$m_1 = 14$, $m_2 = 10$, $m_3 = 3$, $m_4 = 27$, $m_5 = 9$, $\beta = 60°$.

Задача D-33.15.

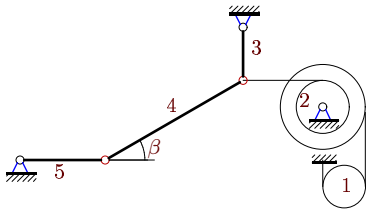
113



$R_1 = 3.5$, $R_2 = 4$, $r_2 = 3$, $i_2 = 3$, $m_1 = 2$, $m_2 = 3$, $m_3 = 3$, $m_4 = 9$, $m_5 = 18$, $\beta = 45°$.

Задача D-33.16.

113



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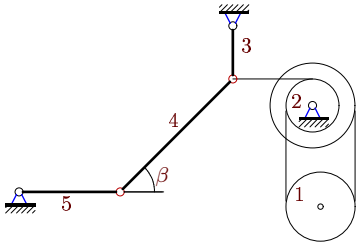
Задача D-33.17.

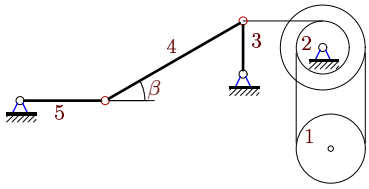
113



$R_1 = 3.5$, $R_2 = 4$, $r_2 = 3$, $i_2 = 2$, $m_1 = m_2 = 2$, $m_3 = 3$, $m_4 = 18$, $m_5 = 9$, $\beta = 45°$.

Задача D-33.18.

113



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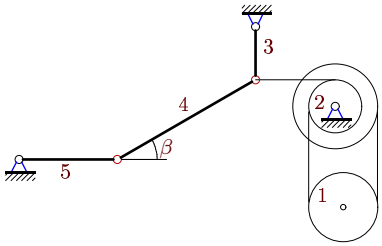
Задача D-33.19.

113



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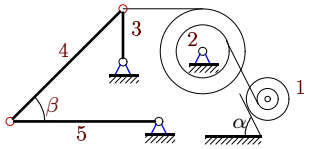
Задача D-33.20.

113



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