

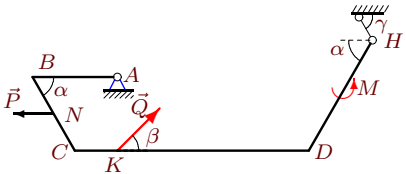
Определение реакций опор рамы

Тяжелая однородная рама расположена в вертикальной плоскости и опирается на неподвижный шарнир A и наклонный невесомый стержень H . К раме приложены горизонтальная сила P , наклонная сила Q и момент M . Учитывая погонный вес рамы ρ , найти реакции опор.

Кирсанов М.Н. **Решебник. Теоретическая механика**/Под ред. А. И. Кириллова.– М.: ФИЗМАТЛИТ, 2008. — 384 с. (с.31.)

Задача S4.1.

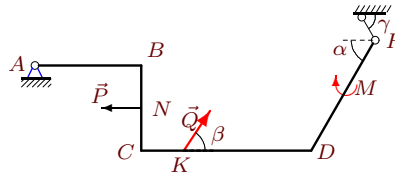
Бродников Иван



$\rho = 2 \text{ кН/м}$, $P = 6 \text{ кН}$, $Q = 16 \text{ кН}$,
 $M = 50 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 30^\circ$, $\gamma = 45^\circ$,
 $AB = 4 \text{ м}$, $BC = 4 \text{ м}$, $CD = 11 \text{ м}$,
 $DH = 6 \text{ м}$, $CK = 2 \text{ м}$, $CN = 2 \text{ м}$.

Задача S4.2.

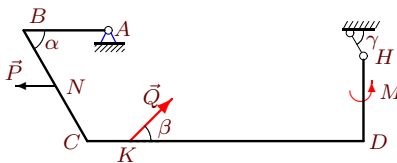
Генералов Сергей



$\rho = 1 \text{ кН/м}$, $P = 7 \text{ кН}$, $Q = 27 \text{ кН}$,
 $M = 15 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 60^\circ$, $\gamma = 30^\circ$,
 $AB = 5 \text{ м}$, $BC = 4 \text{ м}$, $CD = 8 \text{ м}$,
 $DH = 6 \text{ м}$, $CK = 2 \text{ м}$, $CN = 2 \text{ м}$.

Задача S4.3.

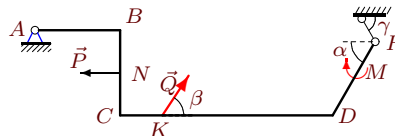
Голованов Алексей



$\rho = 1 \text{ кН/м}$, $P = 5 \text{ кН}$, $Q = 13 \text{ кН}$,
 $M = 30 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 30^\circ$, $\gamma = 30^\circ$,
 $AB = 4 \text{ м}$, $BC = 6 \text{ м}$, $CD = 13 \text{ м}$,
 $DH = 4 \text{ м}$, $CK = 2 \text{ м}$, $CN = 3 \text{ м}$.

Задача S4.4.

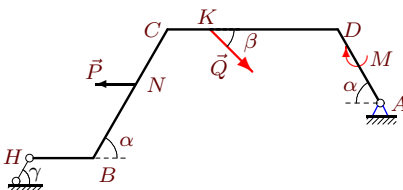
Дощечкин Артём



$\rho = 1 \text{ кН/м}$, $P = 7 \text{ кН}$, $Q = 30 \text{ кН}$,
 $M = 15 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 60^\circ$, $\gamma = 30^\circ$,
 $AB = 4 \text{ м}$, $BC = 4 \text{ м}$, $CD = 10 \text{ м}$,
 $DH = 4 \text{ м}$, $CK = 2 \text{ м}$, $CN = 2 \text{ м}$.

Задача S4.5.

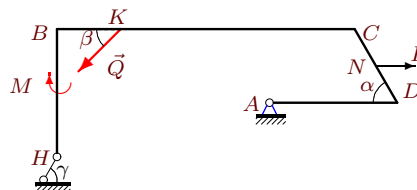
Дружинин Алексей



$\rho = 3 \text{ кН/м}$, $P = 8 \text{ кН}$, $Q = 22 \text{ кН}$,
 $M = 25 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 45^\circ$, $\gamma = 60^\circ$,
 $HB = 3 \text{ м}$, $BC = 7 \text{ м}$, $CD = 8 \text{ м}$,
 $DA = 4 \text{ м}$, $CK = 2 \text{ м}$, $CN = 3 \text{ м}$.

Задача S4.6.

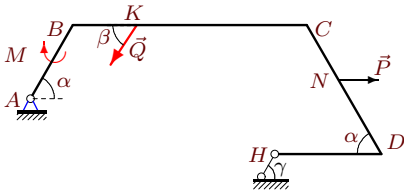
Агеев Алексей



$\rho = 3 \text{ кН/м}$, $P = 7 \text{ кН}$, $Q = 34 \text{ кН}$,
 $M = 25 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 30^\circ$, $\gamma = 60^\circ$,
 $HB = 6 \text{ м}$, $BC = 14 \text{ м}$, $CD = 4 \text{ м}$,
 $DA = 6 \text{ м}$, $BK = 3 \text{ м}$, $CN = 2 \text{ м}$.

Задача S4.7.

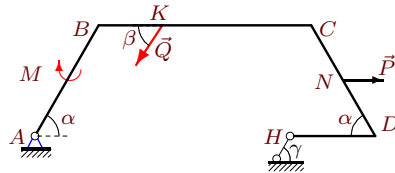
Колпаков Егор



$\rho = 1 \text{ кН/м}$, $P = 7 \text{ кН}$, $Q = 25 \text{ кН}$,
 $M = 15 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 60^\circ$, $\gamma = 30^\circ$,
 $AB = 4 \text{ м}$, $BC = 11 \text{ м}$, $CD = 7 \text{ м}$,
 $DH = 5 \text{ м}$, $BK = 3 \text{ м}$, $CN = 3 \text{ м}$.

Задача S4.8.

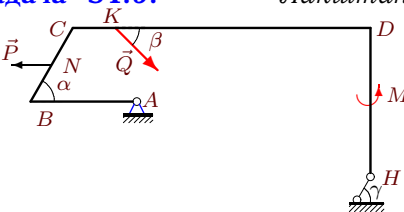
Кузьменко Илья



$\rho = 1 \text{ кН/м}$, $P = 7 \text{ кН}$, $Q = 25 \text{ кН}$,
 $M = 15 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 60^\circ$, $\gamma = 30^\circ$,
 $AB = 6 \text{ м}$, $BC = 10 \text{ м}$, $CD = 6 \text{ м}$,
 $DH = 4 \text{ м}$, $BK = 3 \text{ м}$, $CN = 3 \text{ м}$.

Задача S4.9.

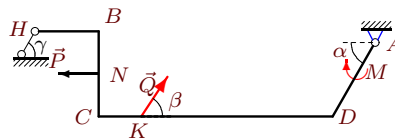
Лакштанкин Александр



$\rho = 1 \text{ кН/м}$, $P = 5 \text{ кН}$, $Q = 11 \text{ кН}$,
 $M = 30 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 30^\circ$, $\gamma = 30^\circ$,
 $AB = 5 \text{ м}$, $BC = 4 \text{ м}$, $CD = 14 \text{ м}$,
 $DH = 7 \text{ м}$, $CK = 2 \text{ м}$, $CN = 2 \text{ м}$.

Задача S4.10.

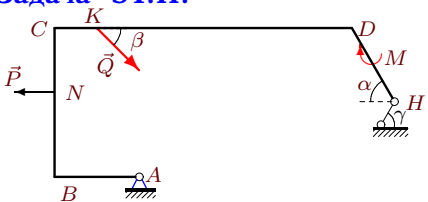
Мухамедов Тимур



$\rho = 3 \text{ кН/м}$, $P = 9 \text{ кН}$, $Q = 35 \text{ кН}$,
 $M = 25 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 60^\circ$, $\gamma = 60^\circ$,
 $HB = 3 \text{ м}$, $BC = 4 \text{ м}$, $CD = 11 \text{ м}$,
 $DA = 4 \text{ м}$, $CK = 2 \text{ м}$, $CN = 2 \text{ м}$.

Задача S4.11.

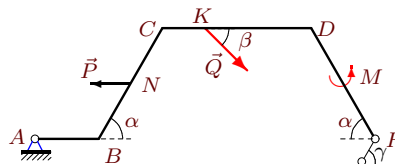
Обухов Олег



$\rho = 1 \text{ кН/м}$, $P = 6 \text{ кН}$, $Q = 34 \text{ кН}$,
 $M = 15 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 45^\circ$, $\gamma = 30^\circ$,
 $AB = 4 \text{ м}$, $BC = 7 \text{ м}$, $CD = 14 \text{ м}$,
 $DH = 4 \text{ м}$, $CK = 2 \text{ м}$, $CN = 3 \text{ м}$.

Задача S4.12.

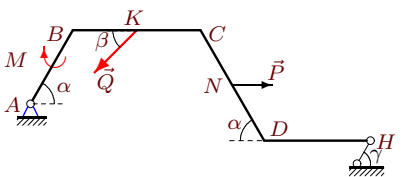
Останин Дмитрий



$\rho = 2 \text{ кН/м}$, $P = 7 \text{ кН}$, $Q = 21 \text{ кН}$,
 $M = 50 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 45^\circ$, $\gamma = 45^\circ$,
 $AB = 3 \text{ м}$, $BC = 6 \text{ м}$, $CD = 7 \text{ м}$,
 $DH = 6 \text{ м}$, $CK = 2 \text{ м}$, $CN = 3 \text{ м}$.

Задача S4.13.

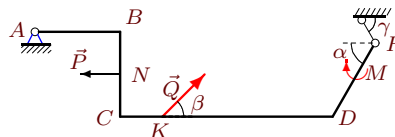
Плякина Карина



$\rho = 2 \text{ кН/м}$, $P = 7 \text{ кН}$, $Q = 23 \text{ кН}$,
 $M = 20 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 45^\circ$, $\gamma = 45^\circ$,
 $AB = 4 \text{ м}$, $BC = 6 \text{ м}$, $CD = 6 \text{ м}$,
 $DH = 5 \text{ м}$, $BK = 3 \text{ м}$, $CN = 3 \text{ м}$.

Задача S4.14.

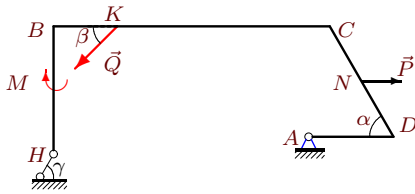
Полторакин Роман



$\rho = 2 \text{ кН/м}$, $P = 7 \text{ кН}$, $Q = 35 \text{ кН}$,
 $M = 20 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 45^\circ$, $\gamma = 45^\circ$,
 $AB = 4 \text{ м}$, $BC = 4 \text{ м}$, $CD = 10 \text{ м}$,
 $DH = 4 \text{ м}$, $CK = 2 \text{ м}$, $CN = 2 \text{ м}$.

Задача S4.15.

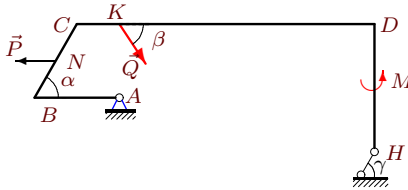
Романов Игорь



$\rho = 3 \text{ кН/м}$, $P = 7 \text{ кН}$, $Q = 35 \text{ кН}$,
 $M = 25 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 30^\circ$, $\gamma = 60^\circ$,
 $HB = 6 \text{ м}$, $BC = 13 \text{ м}$, $CD = 6 \text{ м}$,
 $DA = 4 \text{ м}$, $BK = 3 \text{ м}$, $CN = 3 \text{ м}$.

Задача S4.17.

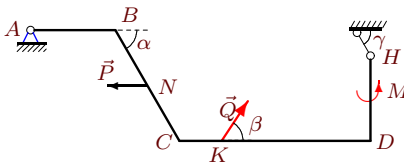
Сурков Алексей



$\rho = 2 \text{ кН/м}$, $P = 8 \text{ кН}$, $Q = 14 \text{ кН}$,
 $M = 50 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 60^\circ$, $\gamma = 45^\circ$,
 $AB = 4 \text{ м}$, $BC = 4 \text{ м}$, $CD = 14 \text{ м}$,
 $DH = 6 \text{ м}$, $CK = 2 \text{ м}$, $CN = 2 \text{ м}$.

Задача S4.19.

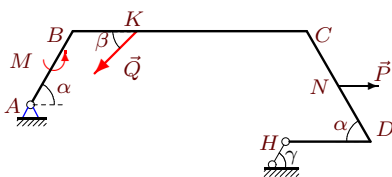
Хоруженко Кирилл



$\rho = 2 \text{ кН/м}$, $P = 8 \text{ кН}$, $Q = 14 \text{ кН}$,
 $M = 50 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 60^\circ$, $\gamma = 45^\circ$,
 $AB = 4 \text{ м}$, $BC = 6 \text{ м}$, $CD = 9 \text{ м}$,
 $DH = 4 \text{ м}$, $CK = 2 \text{ м}$, $CN = 3 \text{ м}$.

Задача S4.21.

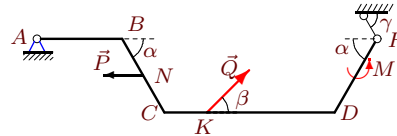
Чернышев Александр



$\rho = 2 \text{ кН/м}$, $P = 6 \text{ кН}$, $Q = 19 \text{ кН}$,
 $M = 50 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 30^\circ$, $\gamma = 45^\circ$,
 $AB = 4 \text{ м}$, $BC = 11 \text{ м}$, $CD = 6 \text{ м}$,
 $DH = 4 \text{ м}$, $BK = 3 \text{ м}$, $CN = 3 \text{ м}$.

Задача S4.16.

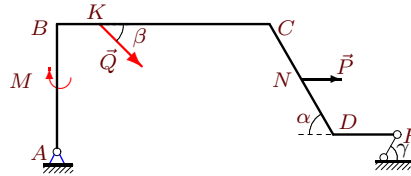
Скачков Роман



$\rho = 2 \text{ кН/м}$, $P = 6 \text{ кН}$, $Q = 17 \text{ кН}$,
 $M = 50 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 30^\circ$, $\gamma = 45^\circ$,
 $AB = 4 \text{ м}$, $BC = 4 \text{ м}$, $CD = 8 \text{ м}$,
 $DH = 4 \text{ м}$, $CK = 2 \text{ м}$, $CN = 2 \text{ м}$.

Задача S4.18.

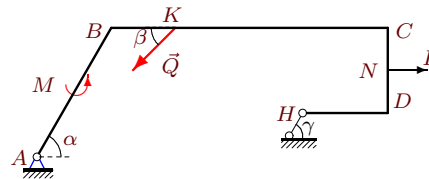
Сухих Александра



$\rho = 1 \text{ кН/м}$, $P = 6 \text{ кН}$, $Q = 32 \text{ кН}$,
 $M = 15 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 45^\circ$, $\gamma = 30^\circ$,
 $AB = 6 \text{ м}$, $BC = 10 \text{ м}$, $CD = 6 \text{ м}$,
 $DH = 3 \text{ м}$, $BK = 2 \text{ м}$, $CN = 3 \text{ м}$.

Задача S4.20.

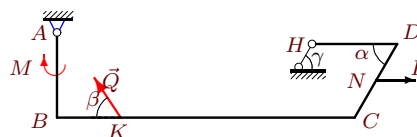
Чабаненко Игорь



$\rho = 2 \text{ кН/м}$, $P = 6 \text{ кН}$, $Q = 14 \text{ кН}$,
 $M = 50 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 30^\circ$, $\gamma = 45^\circ$,
 $AB = 7 \text{ м}$, $BC = 13 \text{ м}$, $CD = 4 \text{ м}$,
 $DH = 4 \text{ м}$, $BK = 3 \text{ м}$, $CN = 2 \text{ м}$.

Задача S4.22.

Чулков Андрей



$\rho = 1 \text{ кН/м}$, $P = 7 \text{ кН}$, $Q = 29 \text{ кН}$,
 $M = 15 \text{ кНм}$, $\alpha = 60^\circ$, $\beta = 60^\circ$, $\gamma = 30^\circ$,
 $AB = 4 \text{ м}$, $BC = 14 \text{ м}$, $CD = 4 \text{ м}$,
 $DH = 4 \text{ м}$, $BK = 3 \text{ м}$, $CN = 2 \text{ м}$.