

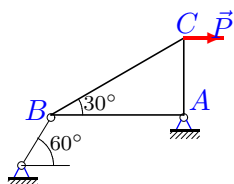
Теорема о трех силах

Тело находится в равновесии под действием трех сил, одна из которых известный вес тела G или внешняя нагрузка P , другая — реакция опоры в точке B (гладкая опора или опорный стержень) с известным направлением, а третья — реакция неподвижного шарнира A . Используя теорему о трех силах, найти неизвестные реакции опор (в кН). Размеры указаны в см.

Кирсанов М.Н. **Решebник. Теоретическая механика**/Под ред. А. И. Кириллова.— М.:ФИЗМАТЛИТ, 2008.— 384 с. (с.26.)

Задача 3.1.

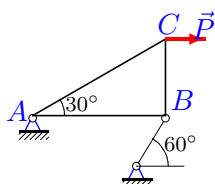
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$$P = 19 \text{ кН}$$

Задача 3.3.

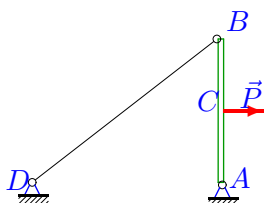
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$$P = 9 \text{ кН}$$

Задача 3.5.

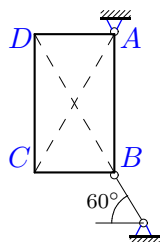
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$$P = 33 \text{ кН}, 4AB = 3AD, AC = BC$$

Задача 3.7.

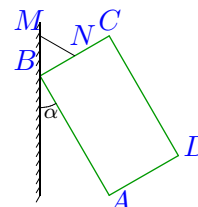
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$$G = 25 \text{ кН}, AB = \sqrt{3}BC$$

Задача 3.2.

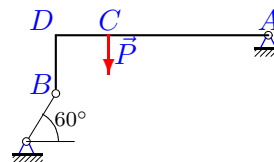
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$$G = 10 \text{ кН}, BN = 15 \text{ см}, NC = 15 \text{ см}, \sqrt{3}AD = DC, \alpha = 30^\circ$$

Задача 3.4.

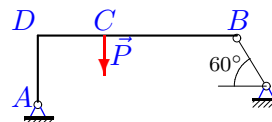
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$$P = 32 \text{ кН}, BD = DC, AD = 4BD.$$

Задача 3.6.

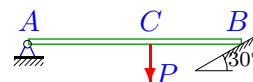
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$$P = 3 \text{ кН}, AD = DC, BD = 3AD.$$

Задача 3.8.

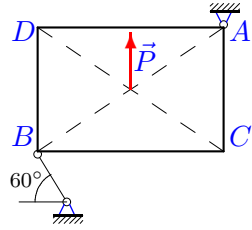
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$$P = 19 \text{ кН}, 3AC = 4CB$$

Задача 3.9.

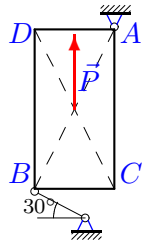
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$P = 9 \text{ кН}, 3AC = 2BC$

Задача 3.11.

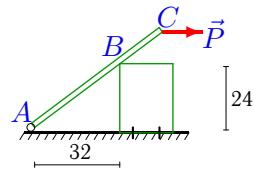
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$P = 10 \text{ кН}, AC = 2BC$

Задача 3.13.

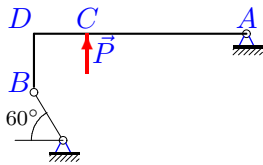
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$P = 8 \text{ кН}, AC = 60 \text{ см}$

Задача 3.15.

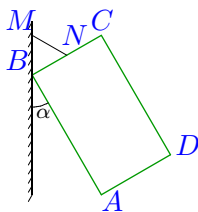
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$P = 25 \text{ кН}, BD = DC, AD = 4BD.$

Задача 3.17.

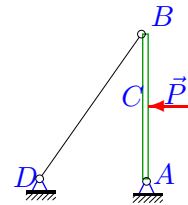
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$G = 23 \text{ кН}, BN = 15 \text{ см}, NC = 15 \text{ см}, \sqrt{3}AD = DC, \alpha = 30^\circ$

Задача 3.10.

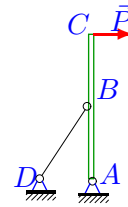
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$P = 1 \text{ кН}, 3AB = 4AD, AC = BC$

Задача 3.12.

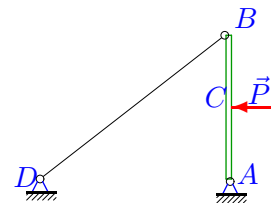
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$P = 19 \text{ кН}, 3AB = 4AD, AB = BC$

Задача 3.14.

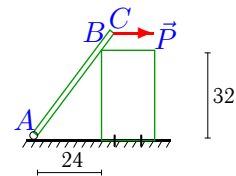
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$P = 1 \text{ кН}, 4AB = 3AD, AC = BC$

Задача 3.16.

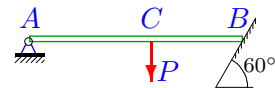
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$P = 8 \text{ кН}, AC = 48 \text{ см}$

Задача 3.18.

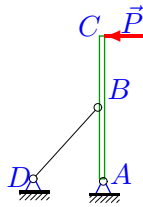
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$P = 27 \text{ кН}, 3AC = 4CB$

Задача 3.19.

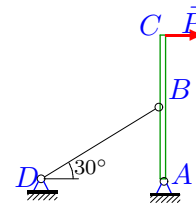
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$P=25$ кН, $AB=AD$, $AB=BC$

Задача 3.20.

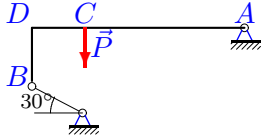
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$P=9$ кН, $AB=BC$

Задача 3.21.

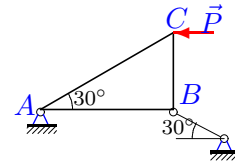
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$P=12$ кН, $BD=DC$, $AD=4BD$.

Задача 3.22.

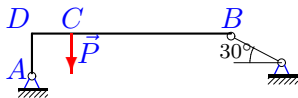
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$P = 23$ кН

Задача 3.23.

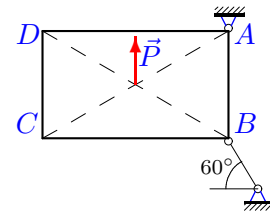
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$P=22$ кН, $AD=DC$, $BD=5AD$.

Задача 3.24.

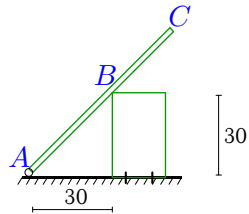
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$P = 19$ кН, $\sqrt{3}AB = BC$

Задача 3.25.

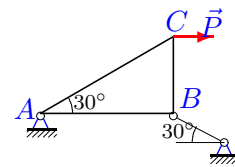
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$G = 29$ кН, $AC = 75$ см

Задача 3.26.

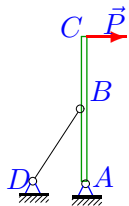
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$P = 26$ кН

Задача 3.27.

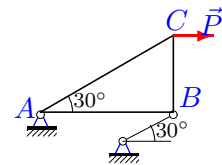
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$P=21$ кН, $3AB=4AD$, $AB=BC$

Задача 3.28.

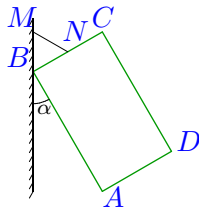
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$P = 26$ кН

Задача 3.29.

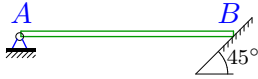
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$G = 29 \text{ кН}$, $BN=15 \text{ см}$, $NC=15 \text{ см}$,
 $\sqrt{3}AD=DC$, $\alpha=30^\circ$

Задача 3.31.

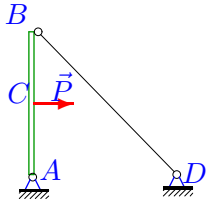
10



$G = 4 \text{ кН}$,

Задача 3.33.

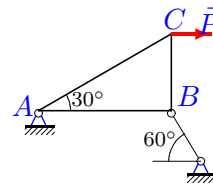
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$P=4 \text{ кН}$, $AB=AD$, $AC=BC$

Задача 3.30.

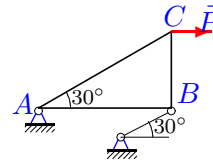
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$P = 26 \text{ кН}$

Задача 3.32.

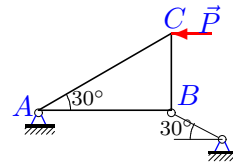
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$P = 19 \text{ кН}$

Задача 3.34.

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$P = 28 \text{ кН}$

Теорема о трех силах

	R_A	R_B
1	12.667	16.756
2	-20.000	17.321
3	-6.000	13.077
4	-32.388	16.669
5	20.625	20.625
6	-0.968	2.215
7	-14.434	14.434
8	-12.537	10.276
9	3.752	6.049
10	-0.833	0.833
11	2.240	9.089
12	63.333	54.112
13	-7.200	6.835
14	-0.625	0.625
15	18.920	12.795
16	-7.680	4.968
17	-46.000	39.837
18	-30.857	29.121
19	-70.711	55.902
20	20.785	13.748
21	-12.561	12.290
22	26.558	13.279
23	-6.536	19.569
24	32.909	19.000
25	-18.125	20.644
26	-30.022	15.011
27	70.000	59.808
28	-30.022	54.123
29	-58.000	50.229
30	-17.333	22.930
31	-2.828	2.828
32	-21.939	39.552
33	-2.828	2.828
34	32.332	16.166