

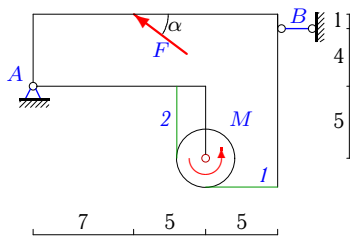
Составная конструкция из трех тел с нитью

Определить реакции опор конструкции (в кН) и натяжения частей нити. Нить огибает цилиндр весом G и соединяет части конструкции. Размеры даны в метрах. Конструкция расположена в вертикальной плоскости.

Кирсанов М.Н. Задачи по теоретической механике с решениями в **Maple 11.** – М.: ФИЗМАТЛИТ, 2010. – 264 с. (с.15)

Задача S-30.1.

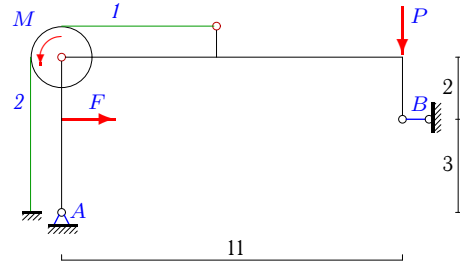
9



$G = 27$ кН, $F = 20$ кН, $M = 156$ кНм,
 $r = 2$ м, $\cos \alpha = 0,8$.

Задача S-30.2.

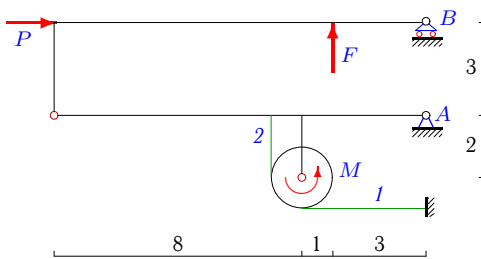
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$G = 5$ кН, $F = 15$ кН,
 $M = 4$ кНм, $P = 2$ кН, $r = 1$ м.

Задача S-30.3.

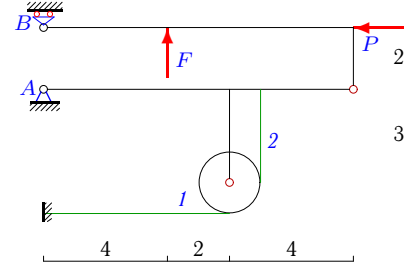
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$G = 18$ кН, $F = 12$ кН, $M = 168$ кНм,
 $P = 72$ кН, $r = 1$ м.

Задача S-30.4.

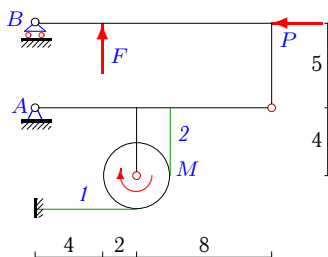
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$G = 6$ кН, $F = 5$ кН,
 $P = 10$ кН, $r = 1$ м.

Задача S-30.5.

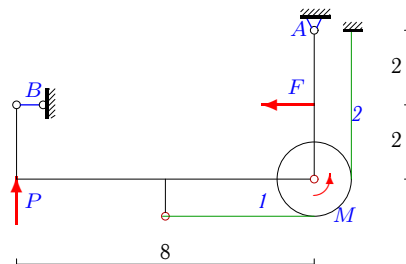
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$G = 9$ кН, $F = 14$ кН, $M = 194$ кНм,
 $P = 42$ кН, $r = 2$ м.

Задача S-30.6.

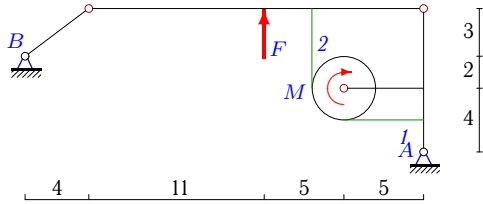
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$G = 13$ кН, $F = 4$ кН,
 $M = 1$ кНм, $P = 1$ кН, $r = 1$ м.

Задача S-30.7.

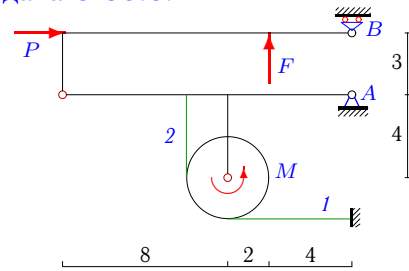
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$G = 107 \text{ кН}$, $F = 56 \text{ кН}$,
 $M = 272 \text{ кНм}$, $r = 2 \text{ м}$.

Задача S-30.8.

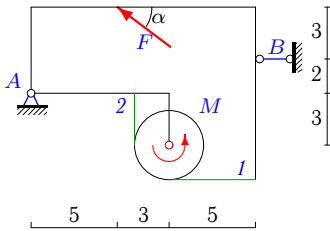
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$G = 11 \text{ кН}$, $F = 14 \text{ кН}$, $M = 110 \text{ кНм}$,
 $P = 42 \text{ кН}$, $r = 2 \text{ м}$.

Задача S-30.9.

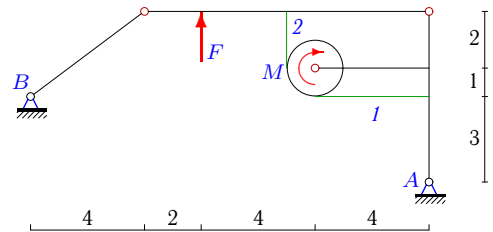
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$G = 27 \text{ кН}$, $F = 10 \text{ кН}$, $M = 196 \text{ кНм}$,
 $r = 2 \text{ м}$, $\cos \alpha = 0,8$.

Задача S-30.10.

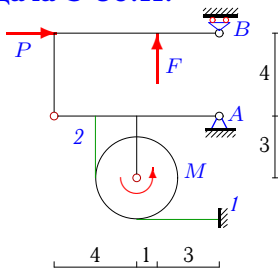
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$G = 62 \text{ кН}$, $F = 35 \text{ кН}$,
 $M = 22 \text{ кНм}$, $r = 1 \text{ м}$.

Задача S-30.11.

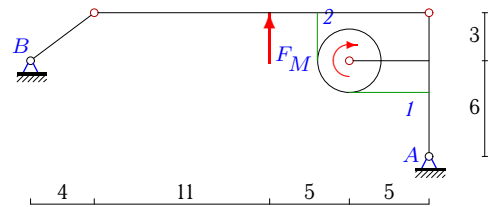
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$G = 8 \text{ кН}$, $F = 8 \text{ кН}$, $M = 14 \text{ кНм}$,
 $P = 8 \text{ кН}$, $r = 2 \text{ м}$.

Задача S-30.12.

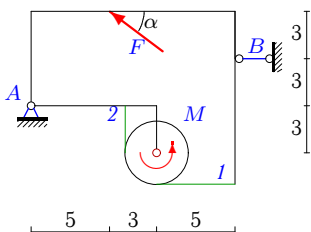
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$G = 69 \text{ кН}$, $F = 42 \text{ кН}$,
 $M = 24 \text{ кНм}$, $r = 2 \text{ м}$.

Задача S-30.13.

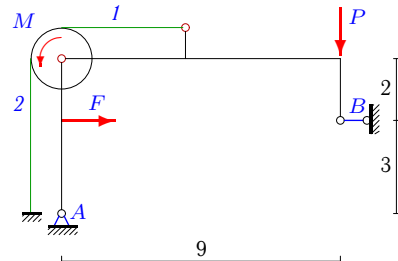
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$G = 32 \text{ кН}$, $F = 15 \text{ кН}$, $M = 226 \text{ кНм}$,
 $r = 2 \text{ м}$, $\cos \alpha = 0,8$.

Задача S-30.14.

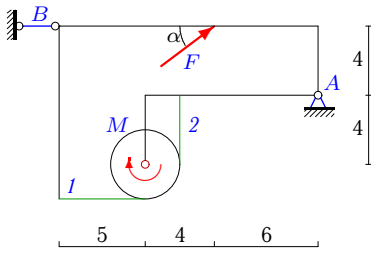
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$G = 5 \text{ кН}$, $F = 5 \text{ кН}$,
 $M = 2 \text{ кНм}$, $P = 2 \text{ кН}$, $r = 1 \text{ м}$.

Задача S-30.15.

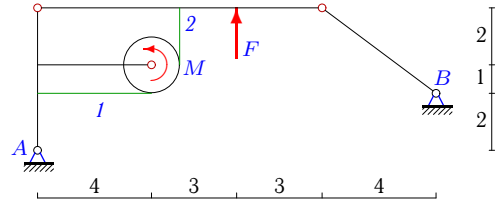
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$G = 25 \text{ кН}$, $F = 20 \text{ кН}$, $M = 154 \text{ кНм}$,
 $r = 2 \text{ м}$, $\cos \alpha = 0,8$.

Задача S-30.16.

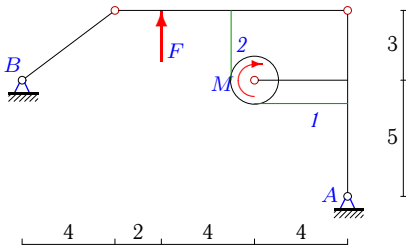
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$G = 48 \text{ кН}$, $F = 30 \text{ кН}$,
 $M = 32 \text{ кНм}$, $r = 1 \text{ м}$.

Задача S-30.17.

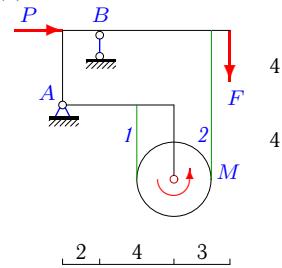
9



$G = 46 \text{ кН}$, $F = 25 \text{ кН}$,
 $M = 46 \text{ кНм}$, $r = 1 \text{ м}$.

Задача S-30.18.

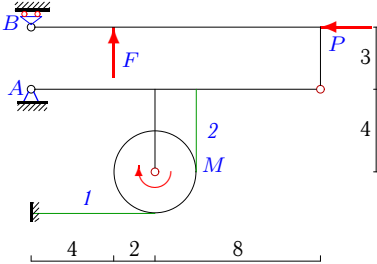
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$G = 24 \text{ кН}$, $F = 6 \text{ кН}$, $M = 128 \text{ кНм}$,
 $P = 8 \text{ кН}$, $r = 2 \text{ м}$.

Задача S-30.19.

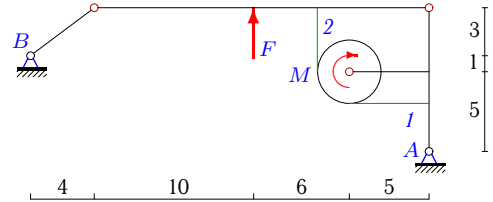
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$G = 17 \text{ кН}$, $F = 28 \text{ кН}$, $M = 250 \text{ кНм}$,
 $P = 84 \text{ кН}$, $r = 2 \text{ м}$.

Задача S-30.20.

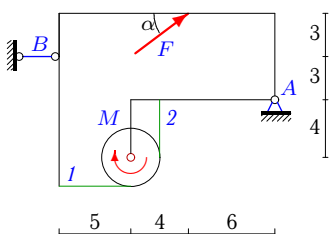
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$G = 53 \text{ кН}$, $F = 28 \text{ кН}$,
 $M = 56 \text{ кНм}$, $r = 2 \text{ м}$.

Задача S-30.21.

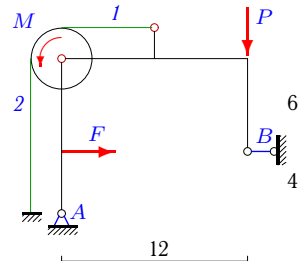
9



$G = 26 \text{ кН}$, $F = 15 \text{ кН}$, $M = 188 \text{ кНм}$,
 $r = 2 \text{ м}$, $\cos \alpha = 0,8$.

Задача S-30.22.

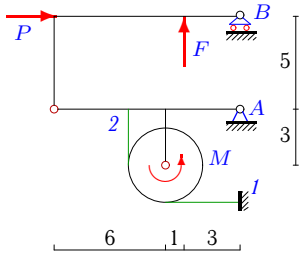
9



$G = 2 \text{ кН}$, $F = 15 \text{ кН}$,
 $M = 4 \text{ кНм}$, $P = 2 \text{ кН}$, $r = 2 \text{ м}$.

Задача S-30.23.

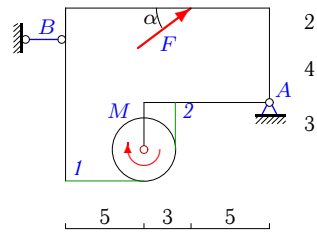
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$G = 20 \text{ кН}, F = 20 \text{ кН}, M = 150 \text{ кНм},$
 $P = 40 \text{ кН}, r = 2 \text{ м}.$

Задача S-30.24.

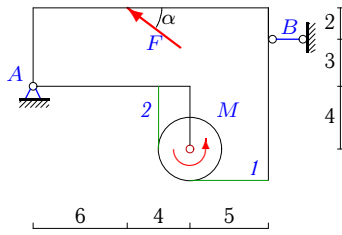
9



$G = 26 \text{ кН}, F = 20 \text{ кН}, M = 168 \text{ кНм},$
 $r = 2 \text{ м}, \cos \alpha = 0,8.$

Задача S-30.25.

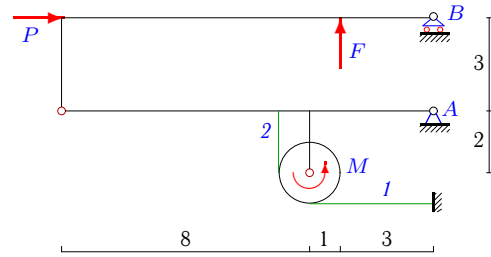
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$G = 32 \text{ кН}, F = 15 \text{ кН}, M = 248 \text{ кНм},$
 $r = 2 \text{ м}, \cos \alpha = 0,8.$

Задача S-30.26.

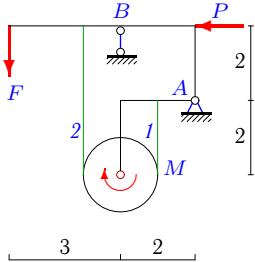
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$G = 14 \text{ кН}, F = 12 \text{ кН}, M = 184 \text{ кНм},$
 $P = 72 \text{ кН}, r = 1 \text{ м}.$

Задача S-30.27.

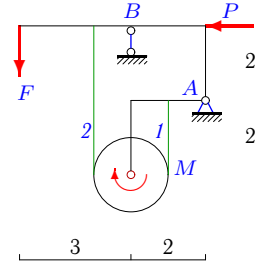
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$G = 16 \text{ кН}, F = 6 \text{ кН}, M = 20 \text{ кНм},$
 $P = 8 \text{ кН}, r = 1 \text{ м}.$

Задача S-30.28.

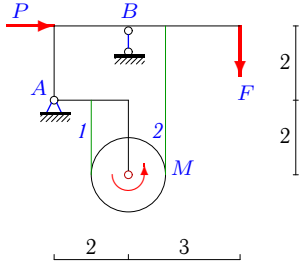
9



$G = 14 \text{ кН}, F = 6 \text{ кН}, M = 16 \text{ кНм},$
 $P = 6 \text{ кН}, r = 1 \text{ м}.$

Задача S-30.29.

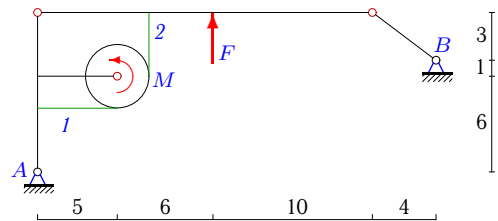
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$G = 20 \text{ кН}, F = 6 \text{ кН}, M = 28 \text{ кНм},$
 $P = 8 \text{ кН}, r = 1 \text{ м}.$

Задача S-30.30.

9



$G = 42 \text{ кН}, F = 21 \text{ кН},$
 $M = 82 \text{ кНм}, r = 2 \text{ м}.$

S-30 Ответы.**Составная конструкция из трех тел с нитью**

22.03.2013

№	X_A	Y_A	R_B	S_1	S_2
1	17	15	-1	24	102
2	-6	43	-9	40	36
3	-76	-3	9	4	172
4	11	2	-1	1	1
5	45	-10	5	3	100
6	-2	-1	2	12	11
7	12	60	-15	189	53
8	-43	-2	-1	1	56
9	-17	21	25	4	102
10	4	30	-5	72	50
11	-10	1	-1	2	9
12	4	30	-5	63	51
13	-17	23	29	6	119
14	-2	29	-3	24	22
15	-26	13	-10	16	93
16	-4	21	-5	68	36
17	4	24	-5	80	34
18	-8	-21	51	66	2
19	86	-9	-2	2	127
20	4	28	-5	63	35
21	-30	17	-18	12	106
22	-9	32	-6	30	28
23	-46	-6	6	6	81
24	-45	14	-29	8	92
25	-2	23	14	12	136
26	-76	-7	9	4	188
27	8	-7	29	24	4
28	6	-7	27	20	4
29	-8	-3	29	32	4
30	-4	24	-5	65	24

S-30 файл о30s9A