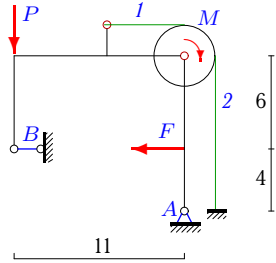


## Составная конструкция из трех тел с нитью

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.

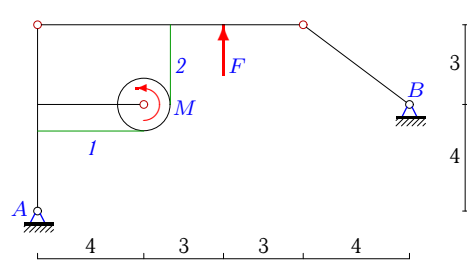
Кирсанов М.Н. Задачи по теоретической механике с решениями в **Maple 11.** – М.: ФИЗМАТЛИТ, 2010. – 264 с. (с.15)

**Задача S-30.1.**



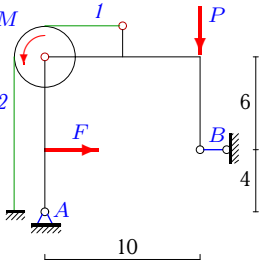
$G = 8 \text{ кН}, F = 20 \text{ кН},$   
 $M = 6 \text{ кНм}, P = 4 \text{ кН}, r = 2 \text{ м}.$

**Задача S-30.2.**



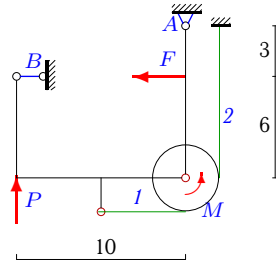
$G = 47 \text{ кН}, F = 25 \text{ кН},$   
 $M = 129 \text{ кНм}, r = 1 \text{ м}.$

**Задача S-30.3.**



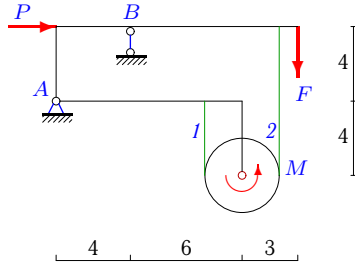
$G = 3 \text{ кН}, F = 10 \text{ кН},$   
 $M = 4 \text{ кНм}, P = 4 \text{ кН}, r = 2 \text{ м}.$

**Задача S-30.4.**



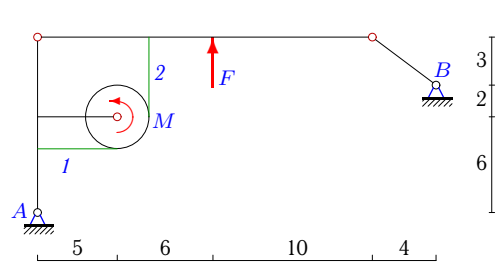
$G = 6 \text{ кН}, F = 9 \text{ кН},$   
 $M = 2 \text{ кНм}, P = 1 \text{ кН}, r = 2 \text{ м}.$

**Задача S-30.5.**



$G = 8 \text{ кН}, F = 12 \text{ кН}, M = 32 \text{ кНм},$   
 $P = 12 \text{ кН}, r = 2 \text{ м}.$

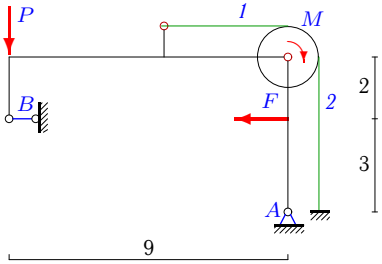
**Задача S-30.6.**



$G = 42 \text{ кН}, F = 21 \text{ кН},$   
 $M = 86 \text{ кНм}, r = 2 \text{ м}.$

**Задача S-30.7.**

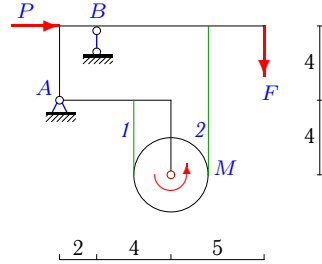
4



$G = 6 \text{ кН}$ ,  $F = 5 \text{ кН}$ ,  
 $M = 2 \text{ кНм}$ ,  $P = 2 \text{ кН}$ ,  $r = 1 \text{ м}$ .

**Задача S-30.8.**

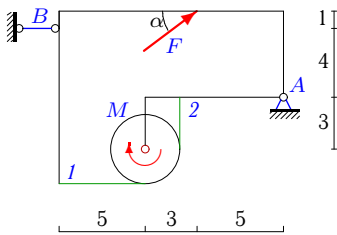
4



$G = 12 \text{ кН}$ ,  $F = 10 \text{ кН}$ ,  $M = 24 \text{ кНм}$ ,  
 $P = 10 \text{ кН}$ ,  $r = 2 \text{ м}$ .

**Задача S-30.9.**

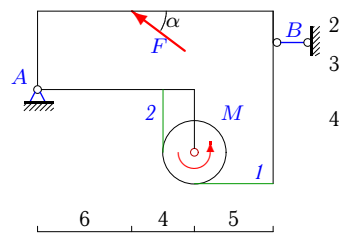
4



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

**Задача S-30.10.**

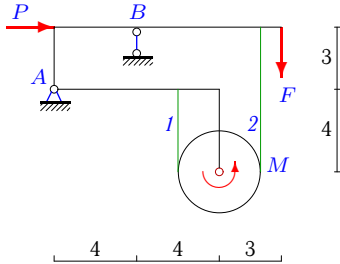
4



$G = 23 \text{ кН}$ ,  $F = 15 \text{ кН}$ ,  $M = 158 \text{ кНм}$ ,  
 $r = 2 \text{ м}$ ,  $\cos \alpha = 0,8$ .

**Задача S-30.11.**

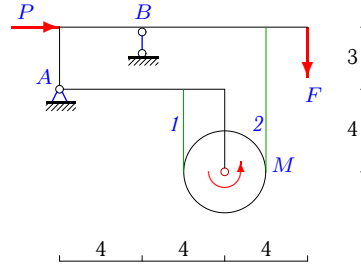
4



$G = 36 \text{ кН}$ ,  $F = 12 \text{ кН}$ ,  $M = 248 \text{ кНм}$ ,  
 $P = 16 \text{ кН}$ ,  $r = 2 \text{ м}$ .

**Задача S-30.12.**

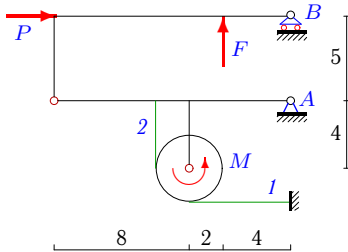
4



$G = 40 \text{ кН}$ ,  $F = 16 \text{ кН}$ ,  $M = 240 \text{ кНм}$ ,  
 $P = 12 \text{ кН}$ ,  $r = 2 \text{ м}$ .

**Задача S-30.13.**

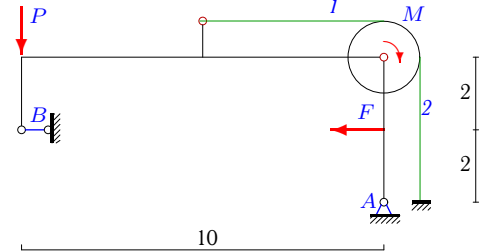
4



$G = 21 \text{ кН}$ ,  $F = 28 \text{ кН}$ ,  $M = 370 \text{ кНм}$ ,  
 $P = 84 \text{ кН}$ ,  $r = 2 \text{ м}$ .

**Задача S-30.14.**

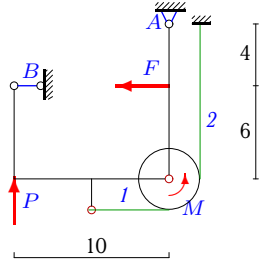
4



$G = 7 \text{ кН}$ ,  $F = 12 \text{ кН}$ ,  
 $M = 3 \text{ кНм}$ ,  $P = 1 \text{ кН}$ ,  $r = 1 \text{ м}$ .

**Задача S-30.15.**

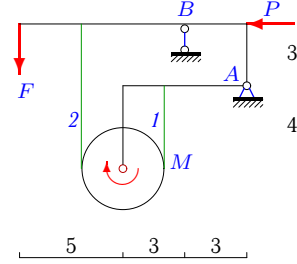
4



$G = 6 \text{ кН}, F = 5 \text{ кН},$   
 $M = 2 \text{ кНм}, P = 2 \text{ кН}, r = 2 \text{ м}.$

**Задача S-30.16.**

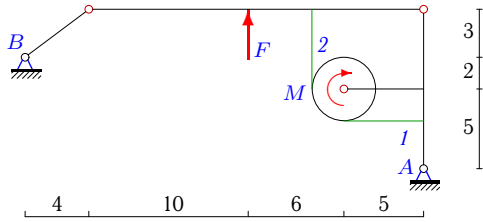
4



$G = 21 \text{ кН}, F = 15 \text{ кН}, M = 54 \text{ кНм},$   
 $P = 12 \text{ кН}, r = 2 \text{ м}.$

**Задача S-30.17.**

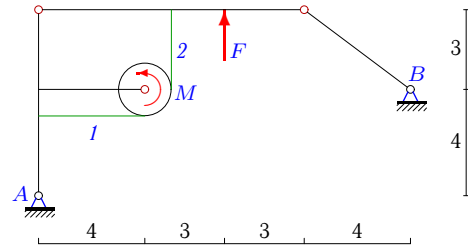
4



$G = 148 \text{ кН}, F = 77 \text{ кН},$   
 $M = 202 \text{ кНм}, r = 2 \text{ м}.$

**Задача S-30.18.**

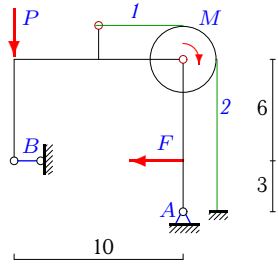
4



$G = 75 \text{ кН}, F = 45 \text{ кН},$   
 $M = 101 \text{ кНм}, r = 1 \text{ м}.$

**Задача S-30.19.**

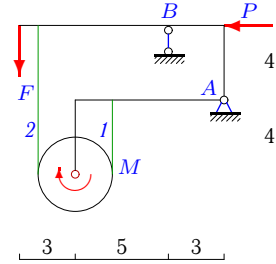
4



$G = 7 \text{ кН}, F = 18 \text{ кН},$   
 $M = 4 \text{ кНм}, P = 2 \text{ кН}, r = 2 \text{ м}.$

**Задача S-30.20.**

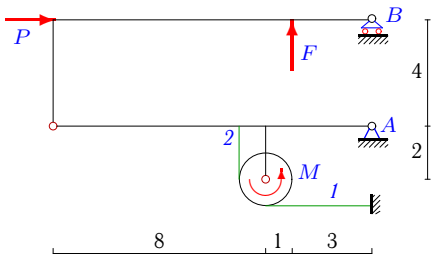
4



$G = 18 \text{ кН}, F = 9 \text{ кН}, M = 114 \text{ кНм},$   
 $P = 12 \text{ кН}, r = 2 \text{ м}.$

**Задача S-30.21.**

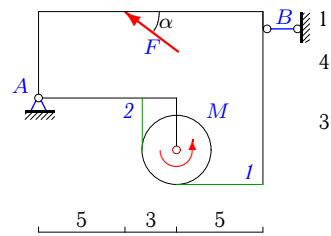
4



$G = 13 \text{ кН}, F = 12 \text{ кН}, M = 254 \text{ кНм},$   
 $P = 72 \text{ кН}, r = 1 \text{ м}.$

**Задача S-30.22.**

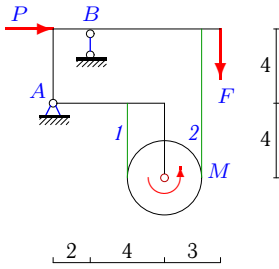
4



$G = 29 \text{ кН}, F = 20 \text{ кН}, M = 192 \text{ кНм},$   
 $r = 2 \text{ м}, \cos \alpha = 0,8.$

**Задача S-30.23.**

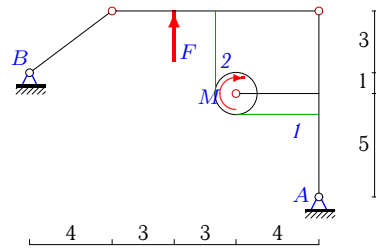
4



$G = 20 \text{ кН}$ ,  $F = 6 \text{ кН}$ ,  $M = 104 \text{ кНм}$ ,  
 $P = 10 \text{ кН}$ ,  $r = 2 \text{ м}$ .

**Задача S-30.24.**

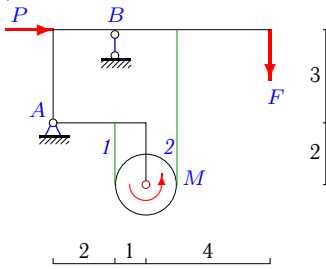
4



$G = 20 \text{ кН}$ ,  $F = 10 \text{ кН}$ ,  
 $M = 76 \text{ кНм}$ ,  $r = 1 \text{ м}$ .

**Задача S-30.25.**

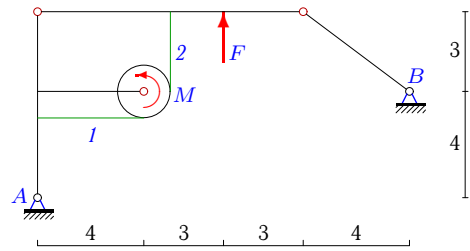
4



$G = 26 \text{ кН}$ ,  $F = 8 \text{ кН}$ ,  $M = 54 \text{ кНм}$ ,  
 $P = 10 \text{ кН}$ ,  $r = 1 \text{ м}$ .

**Задача S-30.26.**

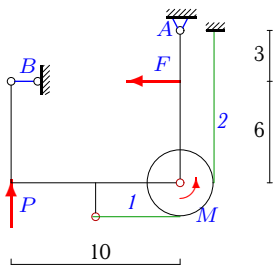
4



$G = 75 \text{ кН}$ ,  $F = 45 \text{ кН}$ ,  
 $M = 101 \text{ кНм}$ ,  $r = 1 \text{ м}$ .

**Задача S-30.27.**

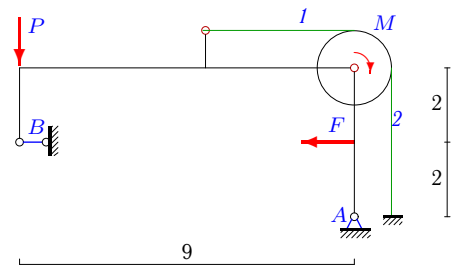
4



$G = 15 \text{ кН}$ ,  $F = 18 \text{ кН}$ ,  
 $M = 4 \text{ кНм}$ ,  $P = 2 \text{ кН}$ ,  $r = 2 \text{ м}$ .

**Задача S-30.28.**

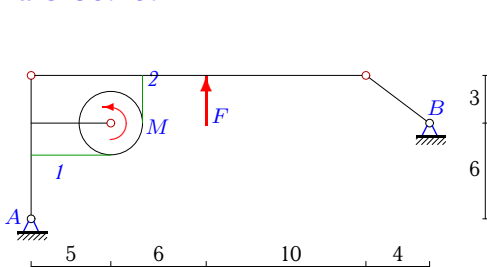
4



$G = 7 \text{ кН}$ ,  $F = 8 \text{ кН}$ ,  
 $M = 2 \text{ кНм}$ ,  $P = 1 \text{ кН}$ ,  $r = 1 \text{ м}$ .

**Задача S-30.29.**

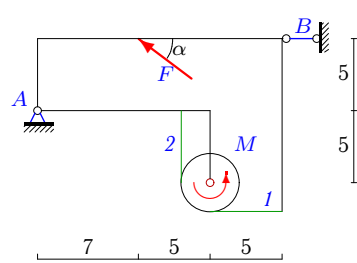
4



$G = 64 \text{ кН}$ ,  $F = 35 \text{ кН}$ ,  
 $M = 34 \text{ кНм}$ ,  $r = 2 \text{ м}$ .

**Задача S-30.30.**

4



$G = 27 \text{ кН}$ ,  $F = 25 \text{ кН}$ ,  $M = 114 \text{ кНм}$ ,  
 $r = 2 \text{ м}$ ,  $\cos \alpha = 0,8$ .

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

22.03.2013

№	$X_A$	$Y_A$	$R_B$	$S_1$	$S_2$
1	-12	55	8	46	43
2	-8	28	-10	152	23
3	-6	37	-4	32	30
4	-6	8	3	14	13
5	-12	-43	63	20	4
6	-4	24	-5	67	24
7	-2	30	3	24	22
8	-10	-77	99	18	6
9	-41	14	-25	8	92
10	-2	14	14	12	91
11	-16	-7	55	128	4
12	-12	-21	77	128	8
13	-90	-17	10	6	191
14	-6	27	6	22	19
15	-3	11	2	16	15
16	12	-55	91	36	9
17	12	80	-15	195	94
18	-8	36	-10	152	51
19	-12	35	6	28	26
20	12	-32	59	60	3
21	-78	-14	15	6	260
22	-9	17	25	8	104
23	-10	-29	55	54	2
24	4	13	-5	84	8
25	-10	-21	55	60	6
26	-8	36	-10	152	51
27	-12	13	6	28	26
28	-4	23	4	17	15
29	-4	32	-5	63	46
30	21	12	-1	30	87

S-30 файл о30s4A