

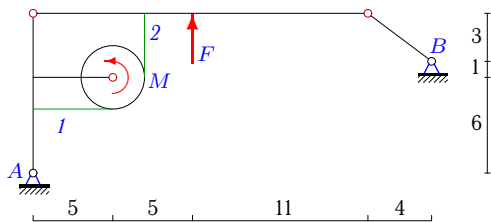
## Составная конструкция из трех тел с нитью

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.**

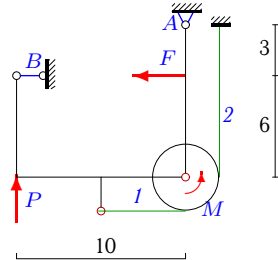
8



$$G = 88 \text{ кН}, F = 49 \text{ кН}, \\ M = 156 \text{ кНм}, r = 2 \text{ м}.$$

**Задача S-30.2.**

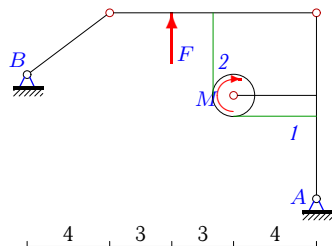
8



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

**Задача S-30.3.**

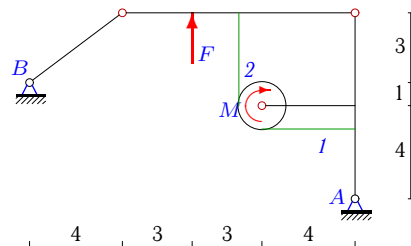
8



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

**Задача S-30.4.**

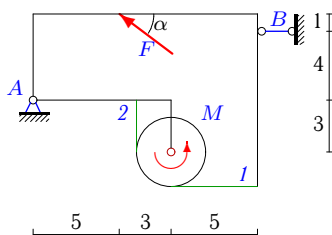
8



$$G = 88 \text{ кН}, F = 50 \text{ кН}, \\ M = 188 \text{ кНм}, r = 1 \text{ м}.$$

**Задача S-30.5.**

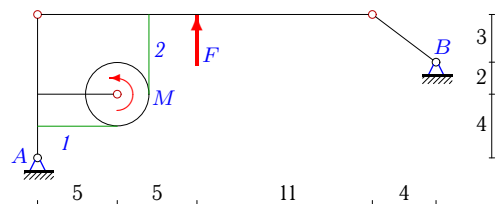
8



$$G = 30 \text{ кН}, F = 20 \text{ кН}, M = 200 \text{ кНм}, \\ r = 2 \text{ м}, \cos \alpha = 0,8.$$

**Задача S-30.6.**

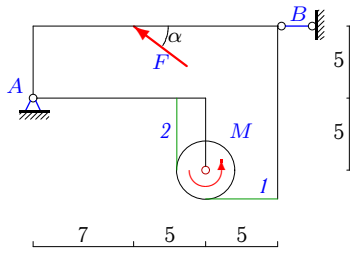
8



$$G = 29 \text{ кН}, F = 14 \text{ кН}, \\ M = 104 \text{ кНм}, r = 2 \text{ м}.$$

**Задача S-30.7.**

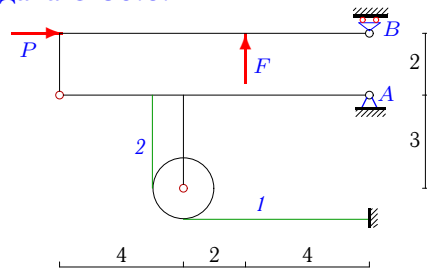
8



$G = 23 \text{ кН}, F = 25 \text{ кН}, M = 66 \text{ кНм},$   
 $r = 2 \text{ м}, \cos \alpha = 0,8.$

**Задача S-30.8.**

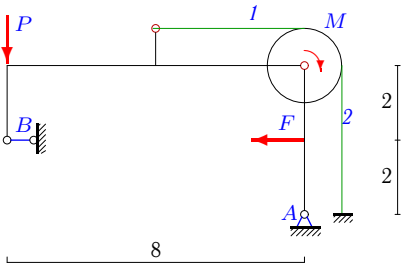
8



$G = 6 \text{ кН}, F = 5 \text{ кН},$   
 $P = 10 \text{ кН}, r = 1 \text{ м}.$

**Задача S-30.9.**

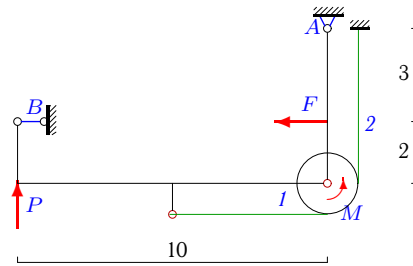
8



$G = 7 \text{ кН}, F = 4 \text{ кН},$   
 $M = 1 \text{ кНм}, P = 1 \text{ кН}, r = 1 \text{ м}.$

**Задача S-30.10.**

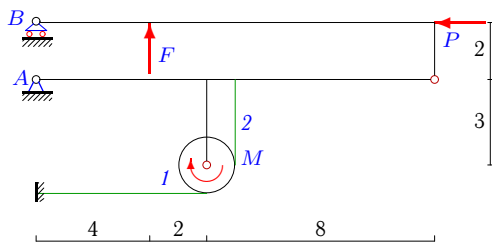
8



$G = 12 \text{ кН}, F = 10 \text{ кН},$   
 $M = 3 \text{ кНм}, P = 2 \text{ кН}, r = 1 \text{ м}.$

**Задача S-30.11.**

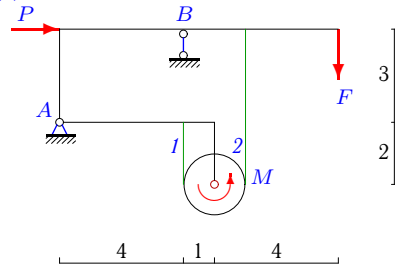
8



$G = 8 \text{ кН}, F = 7 \text{ кН}, M = 60 \text{ кНм},$   
 $P = 42 \text{ кН}, r = 1 \text{ м}.$

**Задача S-30.12.**

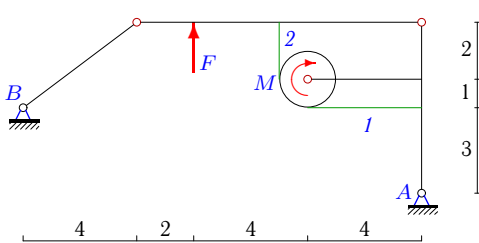
8



$G = 20 \text{ кН}, F = 16 \text{ кН}, M = 28 \text{ кНм},$   
 $P = 12 \text{ кН}, r = 1 \text{ м}.$

**Задача S-30.13.**

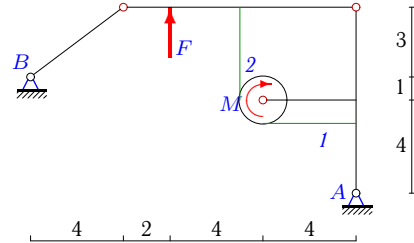
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$G = 62 \text{ кН}, F = 35 \text{ кН},$   
 $M = 22 \text{ кНм}, r = 1 \text{ м}.$

**Задача S-30.14.**

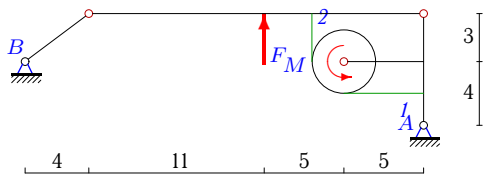
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$G = 74 \text{ кН}, F = 35 \text{ кН},$   
 $M = 202 \text{ кНм}, r = 1 \text{ м}.$

**Задача S-30.15.**

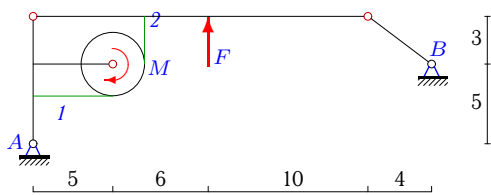
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$G = 89 \text{ кН}, F = 56 \text{ кН},$   
 $M = 24 \text{ кНм}, r = 2 \text{ м}.$

**Задача S-30.17.**

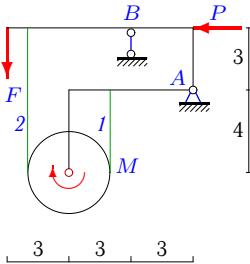
8



$G = 108 \text{ кН}, F = 63 \text{ кН},$   
 $M = 58 \text{ кНм}, r = 2 \text{ м}.$

**Задача S-30.19.**

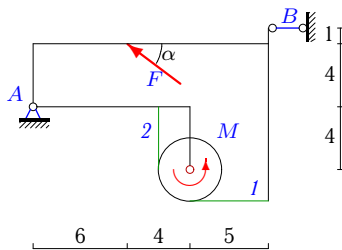
8



$G = 18 \text{ кН}, F = 9 \text{ кН}, M = 84 \text{ кНм},$   
 $P = 6 \text{ кН}, r = 2 \text{ м}.$

**Задача S-30.21.**

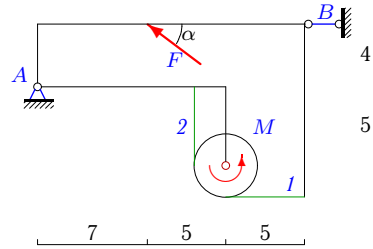
8



$G = 23 \text{ кН}, F = 25 \text{ кН}, M = 110 \text{ кНм},$   
 $r = 2 \text{ м}, \cos \alpha = 0,8.$

**Задача S-30.16.**

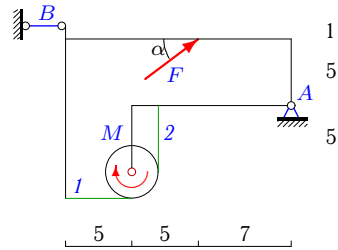
8



$G = 32 \text{ кН}, F = 20 \text{ кН}, M = 216 \text{ кНм},$   
 $r = 2 \text{ м}, \cos \alpha = 0,8.$

**Задача S-30.18.**

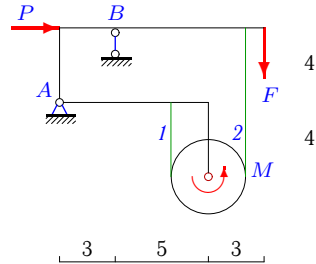
8



$G = 25 \text{ кН}, F = 30 \text{ кН}, M = 48 \text{ кНм},$   
 $r = 2 \text{ м}, \cos \alpha = 0,8.$

**Задача S-30.20.**

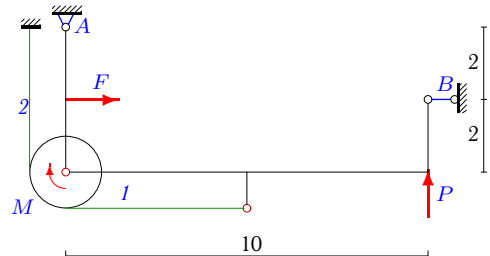
8



$G = 33 \text{ кН}, F = 9 \text{ кН}, M = 234 \text{ кНм},$   
 $P = 12 \text{ кН}, r = 2 \text{ м}.$

**Задача S-30.22.**

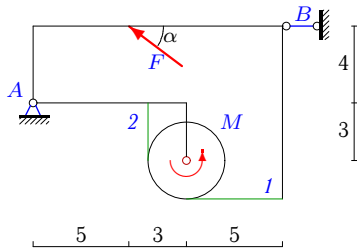
8



$G = 10 \text{ кН}, F = 12 \text{ кН},$   
 $M = 3 \text{ кНм}, P = 1 \text{ кН}, r = 1 \text{ м}.$

**Задача S-30.23.**

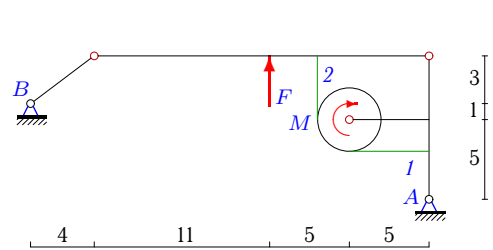
8



$G = 27 \text{ кН}, F = 20 \text{ кН}, M = 176 \text{ кНм},$   
 $r = 2 \text{ м}, \cos \alpha = 0,8.$

**Задача S-30.24.**

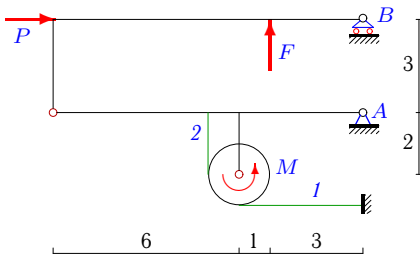
8



$G = 108 \text{ кН}, F = 63 \text{ кН},$   
 $M = 108 \text{ кНм}, r = 2 \text{ м}.$

**Задача S-30.25.**

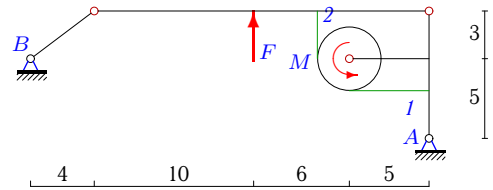
8



$G = 24 \text{ кН}, F = 10 \text{ кН}, M = 42 \text{ кНм},$   
 $P = 40 \text{ кН}, r = 1 \text{ м}.$

**Задача S-30.26.**

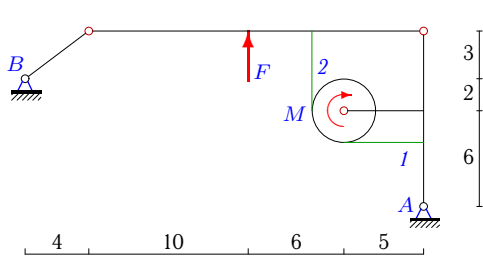
8



$G = 108 \text{ кН}, F = 63 \text{ кН},$   
 $M = 58 \text{ кНм}, r = 2 \text{ м}.$

**Задача S-30.27.**

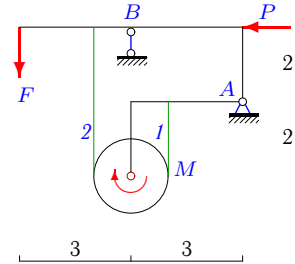
8



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

**Задача S-30.28.**

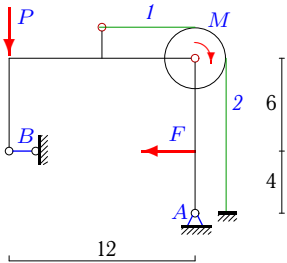
8



$G = 7 \text{ кН}, F = 3 \text{ кН}, M = 13 \text{ кНм},$   
 $P = 2 \text{ кН}, r = 1 \text{ м}.$

**Задача S-30.29.**

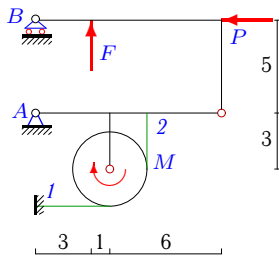
8



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

**Задача S-30.30.**

8



$G = 18 \text{ кН}, F = 20 \text{ кН}, M = 158 \text{ кНм},$   
 $P = 40 \text{ кН}, r = 2 \text{ м}.$

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

22.03.2013

№	$X_A$	$Y_A$	$R_B$	$S_1$	$S_2$
1	-8	45	-10	130	52
2	-12	13	6	28	26
3	4	13	-5	84	8
4	12	47	-15	240	52
5	-9	18	25	8	108
6	-4	18	-5	63	11
7	21	8	-1	30	63
8	-11	2	-1	1	1
9	-2	19	2	12	11
10	-4	19	6	32	29
11	43	0	1	1	61
12	-12	-27	63	40	12
13	4	30	-5	72	50
14	12	48	-15	240	38
15	4	36	-5	59	71
16	21	20	-5	24	132
17	-4	48	-5	61	90
18	-23	7	1	36	60
19	6	-14	41	45	3
20	-12	-17	59	120	3
21	10	8	10	20	75
22	-6	10	-6	22	19
23	-5	15	21	8	96
24	8	51	-10	126	72
25	-44	9	5	4	46
26	4	48	-5	61	90
27	4	24	-5	67	24
28	2	0	10	15	2
29	-9	34	6	30	28
30	46	-8	6	6	85

S-30 файл о30s8A