

# Равновесие рамы

Определить реакции опор рамы;  $\cos \alpha = 0.8$ .

Кирсанов М.Н. **Решебник. Теоретическая механика**/Под ред. А. И. Кириллова.- М.:ФИЗМАТЛИТ, 2008.- 384 с. (с.67.)

**Задача 29.1.** 2

$F = 15 \text{ кН}, P = 1 \text{ кН}, m = 2 \text{ кНм}.$

**Задача 29.2.** 2

$F = 30 \text{ кН}, P = 5 \text{ кН}, m = 25 \text{ кНм}.$

**Задача 29.3.** 2

$F = 20 \text{ кН}, P = 3 \text{ кН}, m = 7 \text{ кНм}.$

**Задача 29.4.** 2

$F = 100 \text{ кН}, P = 3 \text{ кН}, m = 12 \text{ кНм}.$

**Задача 29.5.** 2

$F = 35 \text{ кН}, P = 4 \text{ кН}, m = 16 \text{ кНм}.$

**Задача 29.6.** 2

$F = 30 \text{ кН}, P = 5 \text{ кН}, m = 5 \text{ кНм}.$

**Задача 29.7.** 2

$F = 40 \text{ кН}, P = 4 \text{ кН}, m = 5 \text{ кНм}.$

**Задача 29.8.** 2

$F = 40 \text{ кН}, P = 4 \text{ кН}, m = 17 \text{ кНм}.$

**Задача 29.9.** 2

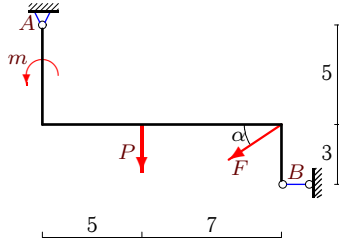
$F = 40 \text{ кН}, P = 4 \text{ кН}, m = 7 \text{ кНм}.$

**Задача 29.10.** 2

$F = 15 \text{ кН}, P = 12 \text{ кН}, m = 7 \text{ кНм}.$

**Задача 29.11.**

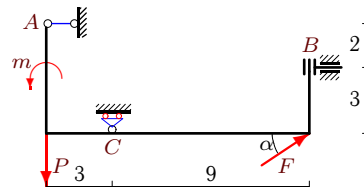
2



$F = 40 \text{ кН}, P = 3 \text{ кН}, m = 15 \text{ кНм}.$

**Задача 29.12.**

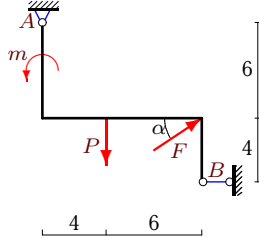
2



$F = 20 \text{ кН}, P = 1 \text{ кН}, m = 23 \text{ кНм}.$

**Задача 29.13.**

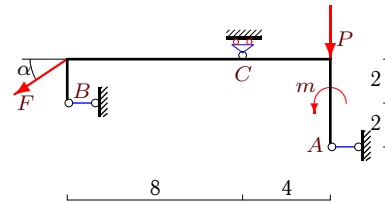
2



$F = 50 \text{ кН}, P = 1 \text{ кН}, m = 4 \text{ кНм}.$

**Задача 29.14.**

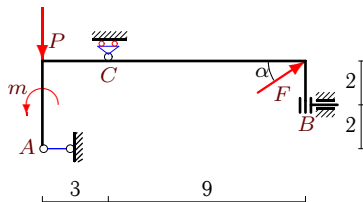
2



$F = 10 \text{ кН}, P = 5 \text{ кН}, m = 20 \text{ кНм}.$

**Задача 29.15.**

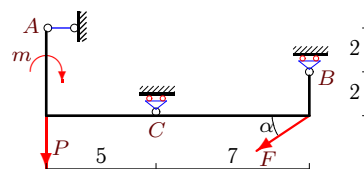
2



$F = 15 \text{ кН}, P = 2 \text{ кН}, m = 22 \text{ кНм}.$

**Задача 29.16.**

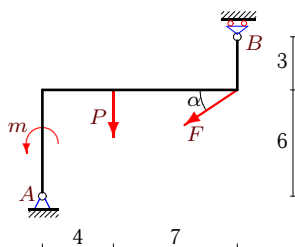
2



$F = 70 \text{ кН}, P = 5 \text{ кН}, m = 25 \text{ кНм}.$

**Задача 29.17.**

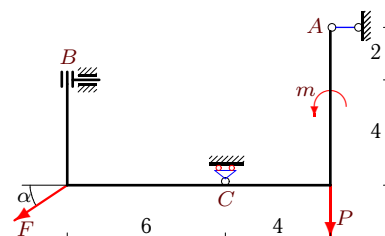
2



$F = 55 \text{ кН}, P = 4 \text{ кН}, m = 16 \text{ кНм}.$

**Задача 29.18.**

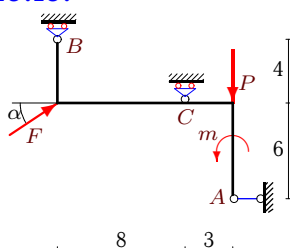
2



$F = 30 \text{ кН}, P = 1 \text{ кН}, m = 5 \text{ кНм}.$

**Задача 29.19.**

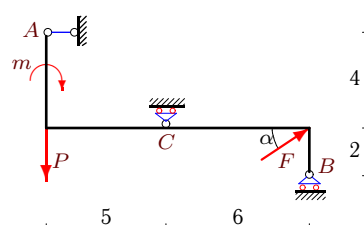
2



$F = 80 \text{ кН}, P = 1 \text{ кН}, m = 3 \text{ кНм}.$

**Задача 29.20.**

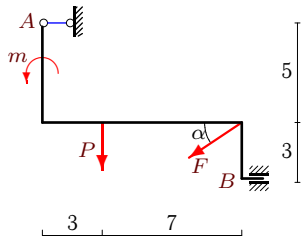
2



$F = 15 \text{ кН}, P = 2 \text{ кН}, m = 10 \text{ кНм}.$

**Задача 29.21.**

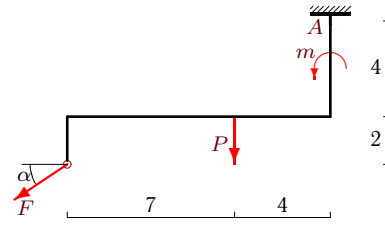
2



$F = 70 \text{ кН}, P = 2 \text{ кН}, m = 5 \text{ кНм}.$

**Задача 29.22.**

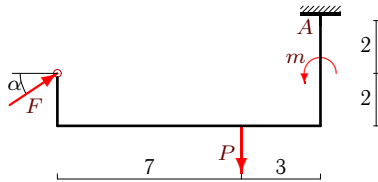
2



$F = 20 \text{ кН}, P = 5 \text{ кН}, m = 5 \text{ кНм}.$

**Задача 29.23.**

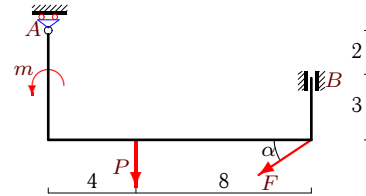
2



$F = 10 \text{ кН}, P = 2 \text{ кН}, m = 3 \text{ кНм}.$

**Задача 29.24.**

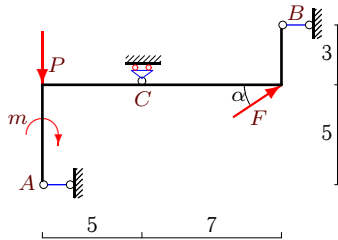
2



$F = 20 \text{ кН}, P = 3 \text{ кН}, m = 8 \text{ кНм}.$

**Задача 29.25.**

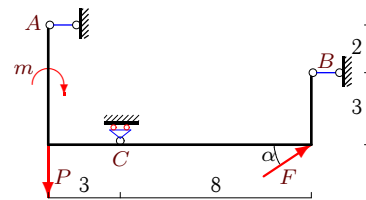
2



$F = 40 \text{ кН}, P = 3 \text{ кН}, m = 15 \text{ кНм}.$

**Задача 29.26.**

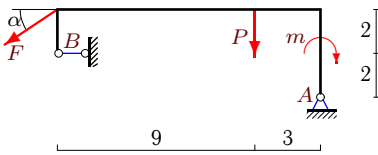
2



$F = 10 \text{ кН}, P = 1 \text{ кН}, m = 3 \text{ кНм}.$

**Задача 29.27.**

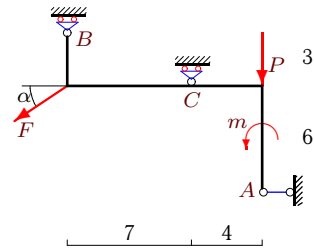
2



$F = 20 \text{ кН}, P = 3 \text{ кН}, m = 9 \text{ кНм}.$

**Задача 29.28.**

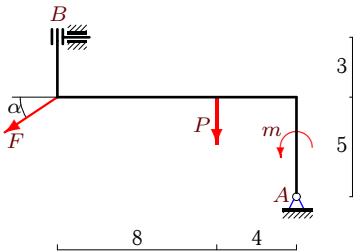
2



$F = 35 \text{ кН}, P = 2 \text{ кН}, m = 8 \text{ кНм}.$

**Задача 29.29.**

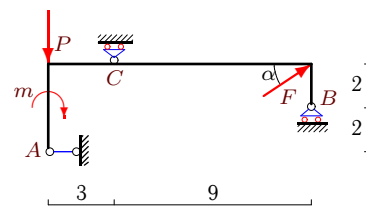
2



$F = 40 \text{ кН}, P = 4 \text{ кН}, m = 17 \text{ кНм}.$

**Задача 29.30.**

2



$F = 45 \text{ кН}, P = 2 \text{ кН}, m = 6 \text{ кНм}.$

**Равновесие рамы**

№	$X_A$	$Y_A$	$M_A$	$X_B$	$Y_B$	$M_B$	$Y_C$
1	12	—	—	—	10	76	—
2	-24	—	—	—	2	—	-15
3	—	15	—	16	—	-128	—
4	80	-45	—	—	108	—	—
5	28	—	—	—	45	—	-20
6	24	23	-84	—	—	—	—
7	32	—	—	—	28	-141	—
8	32	28	—	—	—	447	—
9	32	28	—	—	—	409	—
10	12	—	—	—	21	-127	—
11	-24	27	—	56	—	—	—
12	-16	—	—	—	—	-214	-11
13	14	-29	—	-54	—	—	—
14	-32	—	—	40	—	—	11
15	-12	—	—	—	—	-61	-7
16	56	—	—	—	74	—	-27
17	44	28	—	—	9	—	—
18	24	—	—	—	—	35	19
19	-64	—	—	—	-96	—	49
20	-12	—	—	—	-17	—	10
21	56	—	—	—	44	261	—
22	16	17	-61	—	—	—	—
23	-8	-4	35	—	—	—	—
24	—	15	—	16	—	196	—
25	-33	—	—	1	—	—	-21
26	36	—	—	-44	—	—	-5
27	-88	15	—	104	—	—	—
28	28	—	—	—	45	—	-22
29	32	28	—	—	—	-481	—
30	-36	—	—	—	-11	—	-14