

# 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.** 4

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

**Задача 29.2.** 4

$F = 10 \text{ кН}, P = 3 \text{ кН}, m = 9 \text{ кНм}.$

**Задача 29.3.** 4

$F = 45 \text{ кН}, P = 3 \text{ кН}, m = 8 \text{ кНм}.$

**Задача 29.4.** 4

$F = 20 \text{ кН}, P = 1 \text{ кН}, m = 3 \text{ кНм}.$

**Задача 29.5.** 4

$F = 40 \text{ кН}, P = 5 \text{ кН}, m = 8 \text{ кНм}.$

**Задача 29.6.** 4

$F = 120 \text{ кН}, P = 1 \text{ кН}, m = 3 \text{ кНм}.$

**Задача 29.7.** 4

$F = 70 \text{ кН}, P = 1 \text{ кН}, m = 3 \text{ кНм}.$

**Задача 29.8.** 4

$F = 25 \text{ кН}, P = 3 \text{ кН}, m = 17 \text{ кНм}.$

**Задача 29.9.** 4

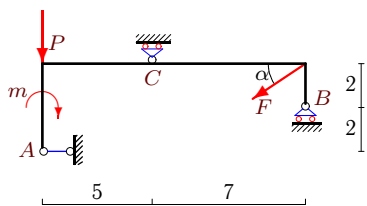
$F = 40 \text{ кН}, P = 3 \text{ кН}, m = 9 \text{ кНм}.$

**Задача 29.10.** 4

$F = 40 \text{ кН}, P = 1 \text{ кН}, m = 4 \text{ кНм}.$

**Задача 29.11.**

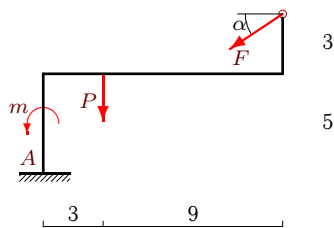
4



$F = 35 \text{ кН}, P = 6 \text{ кН}, m = 30 \text{ кНм}.$

**Задача 29.12.**

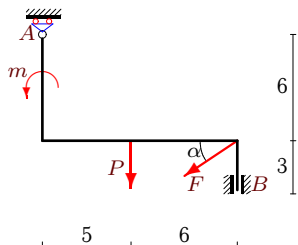
4



$F = 20 \text{ кН}, P = 1 \text{ кН}, m = 4 \text{ кНм}.$

**Задача 29.13.**

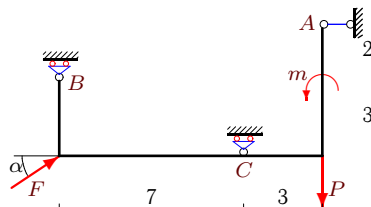
4



$F = 20 \text{ кН}, P = 4 \text{ кН}, m = 7 \text{ кНм}.$

**Задача 29.14.**

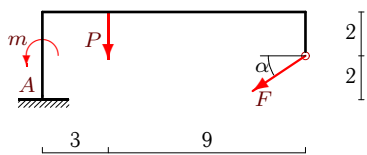
4



$F = 35 \text{ кН}, P = 3 \text{ кН}, m = 9 \text{ кНм}.$

**Задача 29.15.**

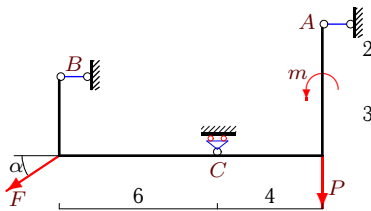
4



$F = 20 \text{ кН}, P = 4 \text{ кН}, m = 7 \text{ кНм}.$

**Задача 29.16.**

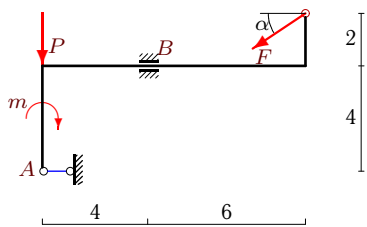
4



$F = 5 \text{ кН}, P = 1 \text{ кН}, m = 4 \text{ кНм}.$

**Задача 29.17.**

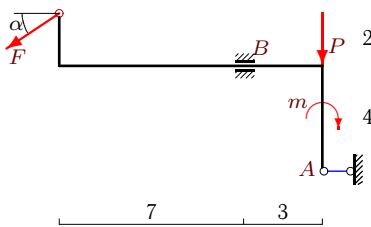
4



$F = 40 \text{ кН}, P = 24 \text{ кН}, m = 7 \text{ кНм}.$

**Задача 29.18.**

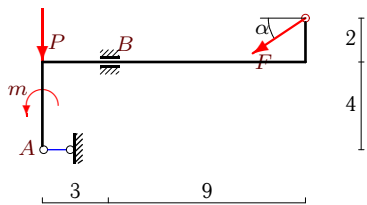
4



$F = 25 \text{ кН}, P = 24 \text{ кН}, m = 7 \text{ кНм}.$

**Задача 29.19.**

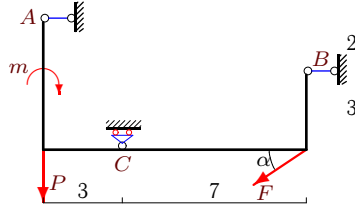
4



$F = 40 \text{ кН}, P = 18 \text{ кН}, m = 7 \text{ кНм}.$

**Задача 29.20.**

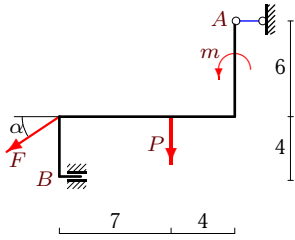
4



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

**Задача 29.21.**

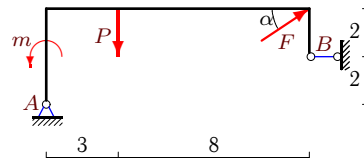
4



$F = 15 \text{ кН}, P = 1 \text{ кН}, m = 3 \text{ кНм}.$

**Задача 29.22.**

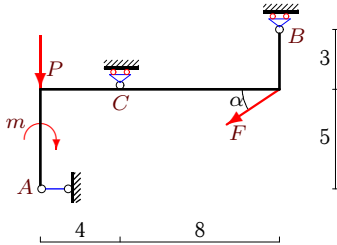
4



$F = 10 \text{ кН}, P = 2 \text{ кН}, m = 6 \text{ кНм}.$

**Задача 29.23.**

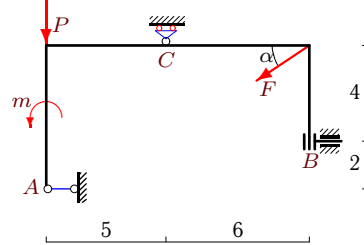
4



$F = 10 \text{ кН}, P = 1 \text{ кН}, m = 4 \text{ кНм}.$

**Задача 29.24.**

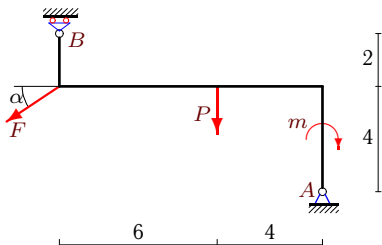
4



$F = 35 \text{ кН}, P = 4 \text{ кН}, m = 17 \text{ кНм}.$

**Задача 29.25.**

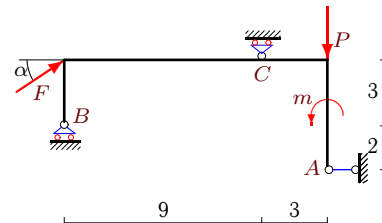
4



$F = 50 \text{ кН}, P = 3 \text{ кН}, m = 12 \text{ кНм}.$

**Задача 29.26.**

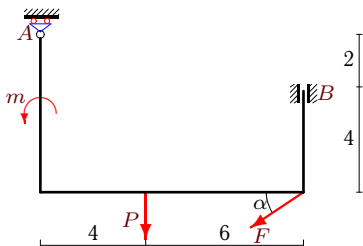
4



$F = 45 \text{ кН}, P = 3 \text{ кН}, m = 9 \text{ кНм}.$

**Задача 29.27.**

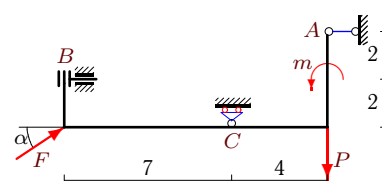
4



$F = 15 \text{ кН}, P = 3 \text{ кН}, m = 5 \text{ кНм}.$

**Задача 29.28.**

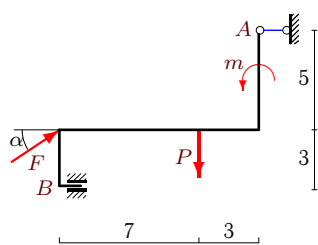
4



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

**Задача 29.29.**

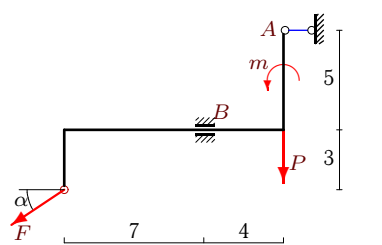
4



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

**Задача 29.30.**

4



$F = 30 \text{ кН}, P = 24 \text{ кН}, m = 7 \text{ кНм}.$

**Равновесие рамы**

№	$X_A$	$Y_A$	$M_A$	$X_B$	$Y_B$	$M_B$	$Y_C$
1	-24	-5	-	16	-	-	-
2	45	-3	-	-53	-	-	-
3	36	30	-	-	-	-74	-
4	80	-	-	-96	-	-	-11
5	32	-	-	-	29	-138	-
6	96	-47	-	-	120	-	-
7	56	-	-	-	-6	-	49
8	-20	-	-	-	-	-2	-12
9	33	-	-	-1	-	-	27
10	32	25	-	-	-	48	-
11	28	-	-	-	5	-	22
12	16	13	15	-	-	-	-
13	-	16	-	16	-	97	-
14	-28	-	-	-	-1	-	-17
15	16	16	117	-	-	-	-
16	3	-	-	1	-	-	4
17	32	-	-	-	48	-137	-
18	20	-	-	-	39	-146	-
19	32	-	-	-	42	-37	-
20	-33	-	-	41	-	-	7
21	12	-	-	-	10	76	-
22	-25	-4	-	17	-	-	-
23	8	-	-	-	1	-	6
24	28	-	-	-	-	-79	25
25	40	-13	-	-	46	-	-
26	-36	-	-	-	-47	-	23
27	-	12	-	12	-	145	-
28	-4	-	-	-	-	4	-2
29	-24	-	-	-	-17	-118	-
30	24	-	-	-	42	155	-