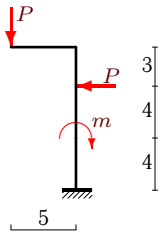


Определение перемещений в консольной раме

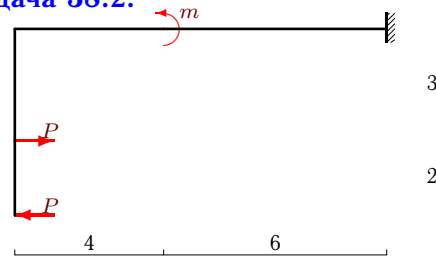
Найти линейные Δ_x , Δ_y и угловое перемещение Δ_φ свободного конца консольной рамы. Условно принять $EJ = 1$.

Задача 38.1.



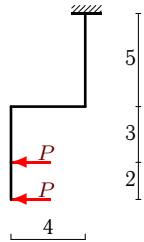
$P = 3 \text{ кН}, m = 30 \text{ кНм}$

Задача 38.2.



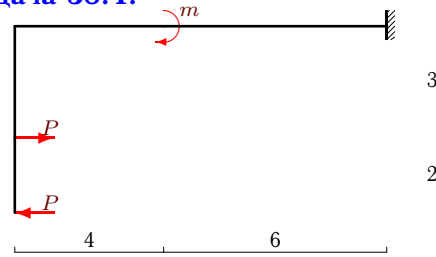
$P = 3 \text{ кН}, m = 30 \text{ кНм}$

Задача 38.3.



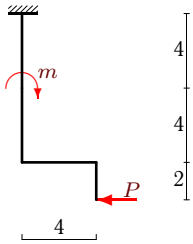
$P = 6 \text{ кН}$

Задача 38.4.



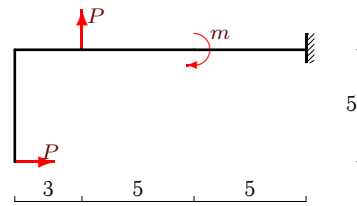
$P = 3 \text{ кН}, m = 30 \text{ кНм}$

Задача 38.5.



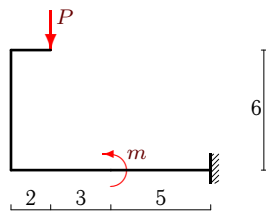
$P = 3 \text{ кН}, m = 36 \text{ кНм}$

Задача 38.6.



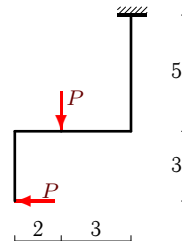
$P = 6 \text{ кН}, m = 60 \text{ кНм}$

Задача 38.7.



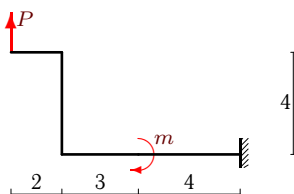
$P = 3 \text{ кН}, m = 18 \text{ кНм}$

Задача 38.8.



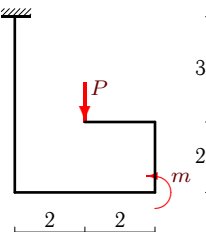
$P = 3 \text{ кН}$

Задача 38.9.

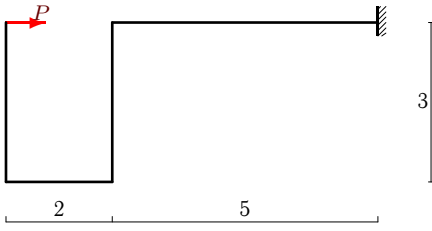


$P = 6 \text{ кН}, m = 60 \text{ кНм}$

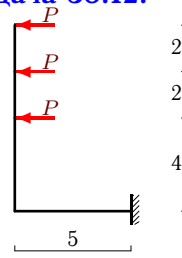
Задача 38.10.



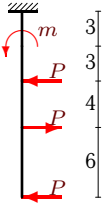
$P = 3 \text{ кН}, m = 12 \text{ кНм}$

Задача 38.11.

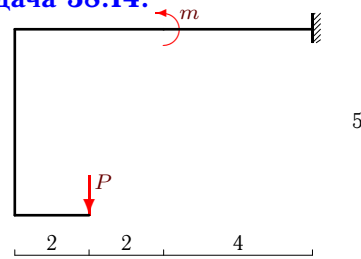
$$P = 6 \text{ кН}, m = 0 \text{ кНм}$$

Задача 38.12.

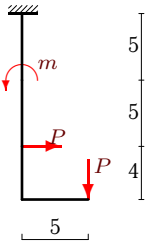
$$P = 3 \text{ кН}$$

Задача 38.13.

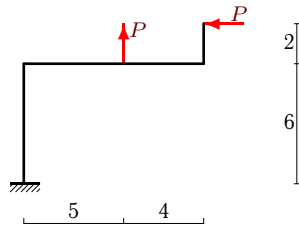
$$P = 6 \text{ кН}, m = 156 \text{ кНм}$$

Задача 38.14.

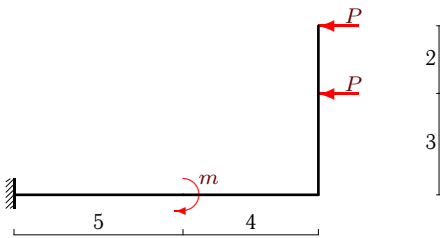
$$P = 6 \text{ кН}, m = 24 \text{ кНм}$$

Задача 38.15.

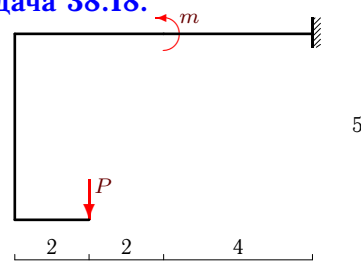
$$P = 6 \text{ кН}, m = 60 \text{ кНм}$$

Задача 38.16.

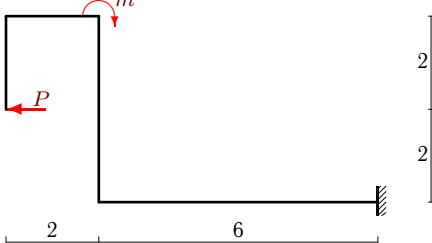
$$P = 3 \text{ кН}$$

Задача 38.17.

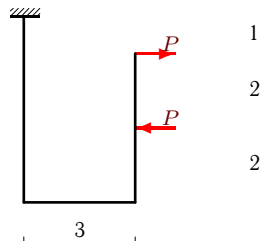
$$P = 6 \text{ кН}, m = 60 \text{ кНм}$$

Задача 38.18.

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

Задача 38.19.

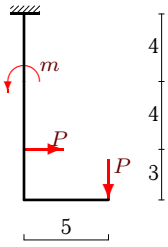
$$P = 6 \text{ кН}, m = 24 \text{ кНм}$$

Задача 38.20.

$$P = 6 \text{ кН}$$

Задача 38.21.

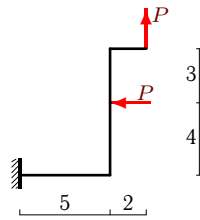
1



$P = 6 \text{ кН}, m = 60 \text{ кНм}$

Задача 38.22.

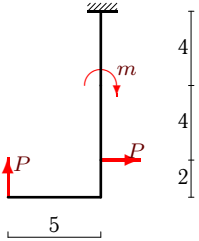
1



$P = 6 \text{ кН}$

Задача 38.23.

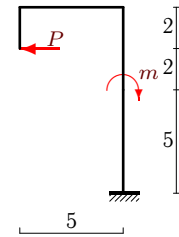
1



$P = 3 \text{ кН}, m = 30 \text{ кНм}$

Задача 38.24.

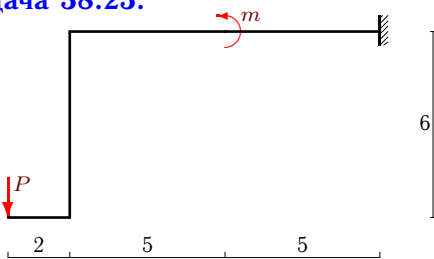
1



$P = 6 \text{ кН}, m = 24 \text{ кНм}$

Задача 38.25.

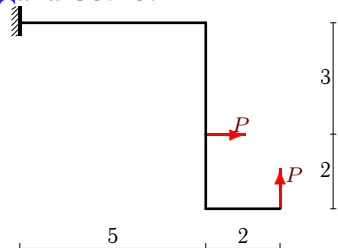
1



$P = 6 \text{ кН}, m = 84 \text{ кНм}$

Задача 38.26.

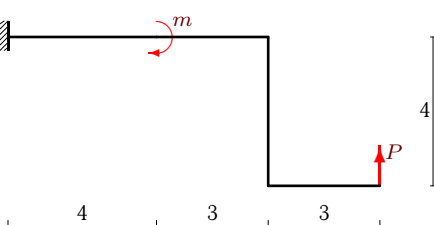
1



$P = 3 \text{ кН}$

Задача 38.27.

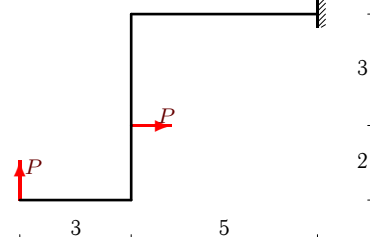
1



$P = 6 \text{ кН}, m = 72 \text{ кНм}$

Задача 38.28.

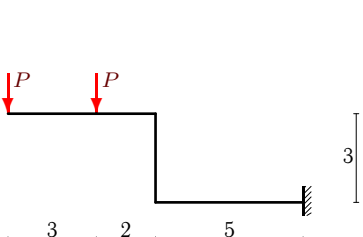
1



$P = 3 \text{ кН}$

Задача 38.29.

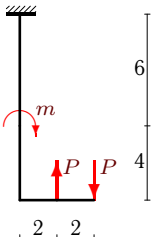
1



$P = 6 \text{ кН}$

Задача 38.30.

1



$P = 6 \text{ кН}, m = 48 \text{ кНм}$

Определение перемещений в консольной раме

№	M_1	M'_1	M_2	M'_2	M_3	M'_3	M_4	M'_4	Δ_φ	Δ_x	Δ_y
1	0	15	15	15	15	27	-3	9	178.5	-627.5	-830
2	0	-6	-6	-6	-6	-6	24	24	96	529	-960
3	0	-12	-12	-48	-48	-48	-48	-108	-684	-4368	1944
4	0	-6	-6	-6	-6	-6	24	24	96	529	-960
5	0	-6	-6	-6	-6	-18	18	6	-30	104	-48
6	0	30	30	30	30	0	-60	-90	-135	-800	3515
7	0	-6	-6	-6	-6	9	-9	6	-42	108	-105
8	0	-9	-9	-9	-9	0	0	-15	-82.5	-359	246
9	0	-12	-12	-12	-12	-30	30	6	-51	60	-126
10	0	6	6	6	18	6	6	6	96	-93	12
11	0	-18	-18	-18	-18	0	0	0	-90	216	90
12	0	6	6	18	18	54	54	54	444	-3156	-675
13	0	-36	-36	-36	-36	-54	102	84	-108	882	0
14	0	-12	-12	-12	-12	12	-12	12	-72	-150	-200
15	0	-30	-30	-30	-30	0	60	90	105	3710	650
16	0	6	6	6	6	21	21	39	277.5	-1145	2138
17	0	12	12	48	48	48	-12	-12	234	-1018	-6
18	0	-6	-6	-6	-6	6	-6	6	-36	-75	-100
19	0	-12	-12	-12	-36	-12	-12	-12	-204	48	576
20	0	-12	-12	-12	-12	-12	-12	-12	-132	322	-234
21	0	-30	-30	-30	-30	-6	54	78	27	1945	260
22	0	12	12	12	12	36	36	66	399	-2351	1490
23	0	-15	-15	-15	-15	-3	27	39	28.5	914	-205
24	0	-12	-12	-12	-12	12	-12	18	-57	-298	75
25	0	12	12	12	12	42	-42	-12	84	216	390
26	0	6	6	6	6	15	15	30	162	691.5	632.5
27	0	18	18	18	18	36	-36	-12	84	84	-88
28	0	-9	-9	-9	-9	0	0	-15	-82.5	-246	359
29	0	18	18	42	42	42	42	102	573	-1269	-3757
30	0	-12	-12	-12	-12	-12	36	36	132	1416	584

№	Δ_{x1}	Δ_{x2}	Δ_{x3}	Δ_{x4}	Δ_{y1}	Δ_{y2}	Δ_{y3}	Δ_{y4}	$\Delta_{\varphi1}$	$\Delta_{\varphi2}$	$\Delta_{\varphi3}$	$\Delta_{\varphi4}$
1	-124.0	-436.0	-67.5	0.0	-60.0	-420.0	-225.0	-125.0	12.0	84.0	45.0	37.5
2	720.0	-120.0	-63.0	-8.0	-1008.0	48.0	0.0	0.0	144.0	-24.0	-18.0	-6.0
3	-3050.0	-960.0	-342.0	-16.0	1560.0	384.0	0.0	0.0	-390.0	-192.0	-90.0	-12.0
4	720.0	-120.0	-63.0	-8.0	-1008.0	48.0	0.0	0.0	144.0	-24.0	-18.0	-6.0
5	368.0	-208.0	-48.0	-8.0	192.0	-192.0	-48.0	0.0	48.0	-48.0	-24.0	-6.0
6	-1875.0	375.0	450.0	250.0	4000.0	-350.0	-135.0	0.0	-375.0	75.0	90.0	75.0
7	45.0	-45.0	108.0	0.0	10.0	-35.0	-72.0	-8.0	-7.5	7.5	-36.0	-6.0
8	-237.5	-40.5	-54.0	-27.0	187.5	40.5	18.0	0.0	-37.5	-13.5	-18.0	-13.5
9	-288.0	252.0	96.0	0.0	-472.0	234.0	96.0	16.0	72.0	-63.0	-48.0	-12.0
10	15.0	-96.0	-12.0	0.0	60.0	-16.0	-24.0	-8.0	30.0	48.0	12.0	6.0
11	0.0	54.0	108.0	54.0	0.0	54.0	36.0	0.0	0.0	-27.0	-36.0	-27.0
12	-2160.0	-912.0	-76.0	-8.0	-675.0	0.0	0.0	0.0	270.0	144.0	24.0	6.0
13	4032.0	-1566.0	-1152.0	-432.0	0.0	0.0	0.0	0.0	279.0	-135.0	-144.0	-108.0
14	0.0	0.0	-150.0	0.0	-32.0	-32.0	-120.0	-16.0	0.0	0.0	-60.0	-12.0
15	4375.0	-425.0	-240.0	0.0	1875.0	-375.0	-600.0	-250.0	375.0	-75.0	-120.0	-75.0
16	-954.0	-135.0	-48.0	-8.0	1620.0	470.0	48.0	0.0	180.0	67.5	24.0	6.0
17	300.0	-960.0	-342.0	-16.0	-390.0	384.0	0.0	0.0	-60.0	192.0	90.0	12.0
18	0.0	0.0	-75.0	0.0	-16.0	-16.0	-60.0	-8.0	0.0	0.0	-30.0	-6.0
19	144.0	-32.0	-48.0	-16.0	360.0	192.0	24.0	0.0	-72.0	-96.0	-24.0	-12.0
20	90.0	144.0	72.0	16.0	-180.0	-54.0	0.0	0.0	-60.0	-36.0	-24.0	-12.0
21	2408.0	-328.0	-135.0	0.0	1320.0	-360.0	-450.0	-250.0	264.0	-72.0	-90.0	-75.0
22	-1785.0	-512.0	-54.0	0.0	1210.0	192.0	72.0	16.0	255.0	96.0	36.0	12.0
23	1072.0	-128.0	-30.0	0.0	-660.0	180.0	150.0	125.0	132.0	-36.0	-30.0	-37.5
24	-130.0	-32.0	-120.0	-16.0	-75.0	0.0	150.0	0.0	15.0	0.0	-60.0	-12.0
25	-810.0	810.0	216.0	0.0	1220.0	-670.0	-144.0	-16.0	-135.0	135.0	72.0	12.0
26	562.5	117.0	12.0	0.0	537.5	63.0	24.0	8.0	112.5	31.5	12.0	6.0
27	-384.0	324.0	144.0	0.0	-736.0	378.0	216.0	54.0	-96.0	81.0	72.0	27.0
28	-187.5	-40.5	-18.0	0.0	237.5	40.5	54.0	27.0	-37.5	-13.5	-18.0	-13.5
29	-1080.0	-189.0	0.0	0.0	-2825.0	-630.0	-248.0	-54.0	360.0	126.0	60.0	27.0
30	1512.0	-96.0	0.0	0.0	864.0	-192.0	-72.0	-16.0	216.0	-48.0	-24.0	-12.0