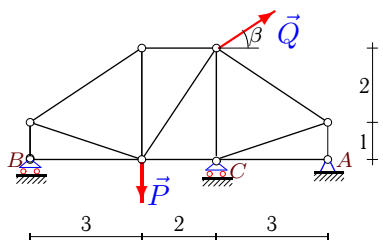
Расчет статически неопределимой фермы

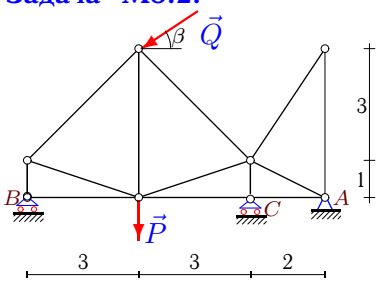
Найти реакции опор фермы.

Задача М8.1. 4



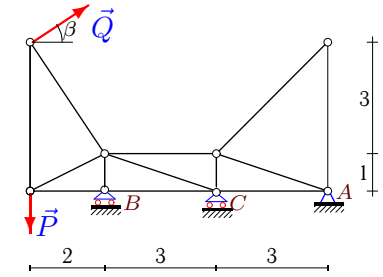
$P = 9$ кН,
$Q = 3$ кН,
$\beta = 15°$.

Задача М8.2. 4



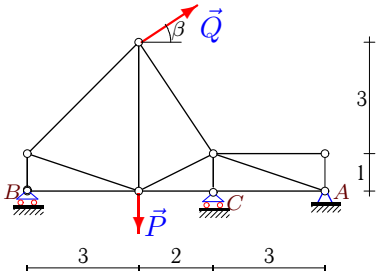
$P = 9$ кН,
$Q = 7$ кН,
$\beta = 45°$.

Задача М8.3. 4



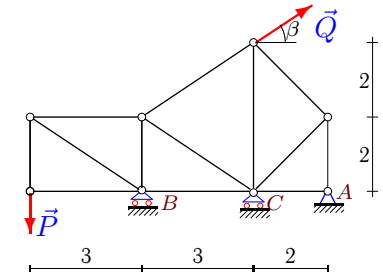
$P = 13$ кН,
$Q = 7$ кН,
$\beta = 15°$.

Задача М8.4. 4



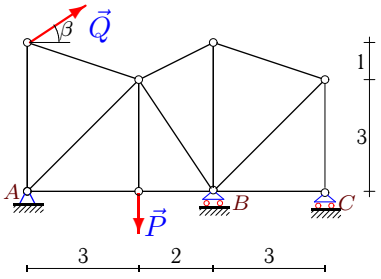
$P = 7$ кН,
$Q = 3$ кН,
$\beta = 45°$.

Задача М8.5. 4



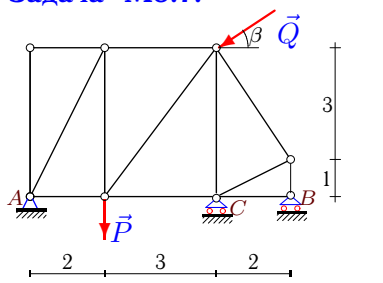
$P = 9$ кН,
$Q = 9$ кН,
$\beta = 30°$.

Задача М8.6. 4



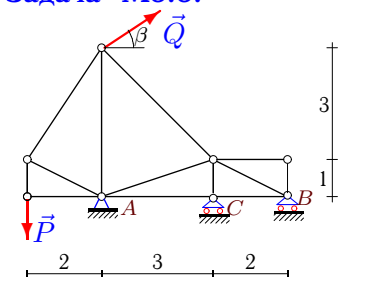
$P = 5$ кН,
$Q = 5$ кН,
$\beta = 15°$.

Задача М8.7. 4



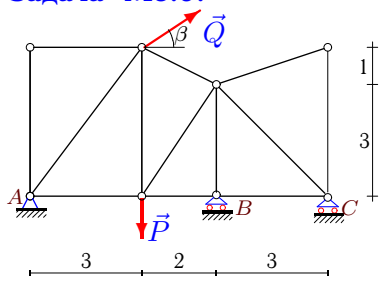
$P = 10$ кН,
$Q = 9$ кН,
$\beta = 15°$.

Задача М8.8. 4



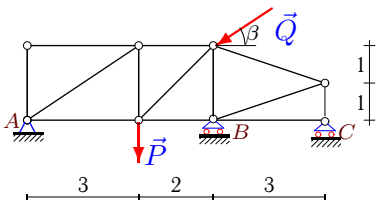
$P = 9$ кН,
$Q = 4$ кН,
$\beta = 45°$.

Задача М8.9. 4



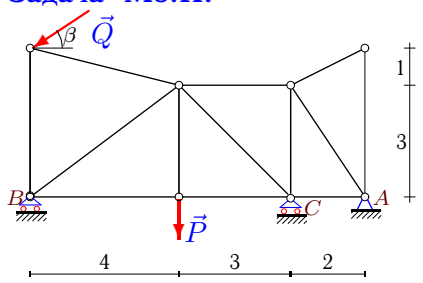
$P = 7$ кН,
$Q = 6$ кН,
$\beta = 15°$.

Задача М8.10. 4



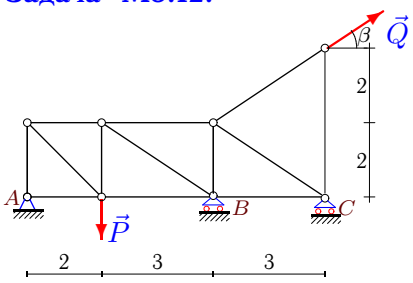
$P = 8$ кН,
$Q = 6$ кН,
$\beta = 45°$.

Задача М8.11.



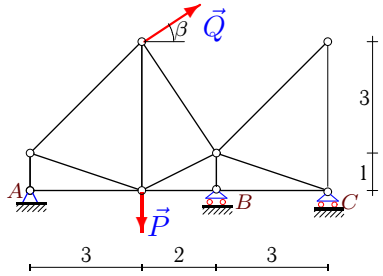
$P = 13$ кН,
$Q = 8$ кН,
$\beta = 30°$.

Задача М8.12.



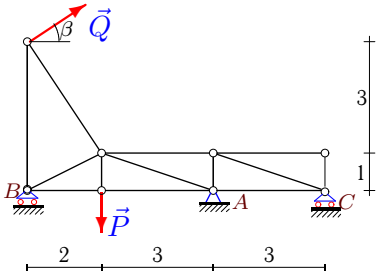
$P = 11$ кН,
$Q = 8$ кН,
$\beta = 30°$.

Задача М8.13.



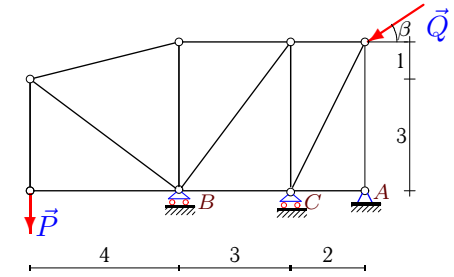
$P = 11$ кН,
$Q = 4$ кН,
$\beta = 45°$.

Задача М8.14.



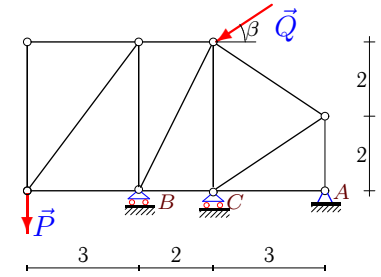
$P = 7$ кН,
$Q = 9$ кН,
$\beta = 15°$.

Задача М8.15.



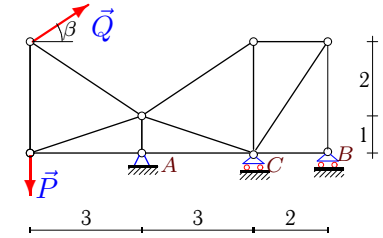
$P = 10$ кН,
$Q = 3$ кН,
$\beta = 30°$.

Задача М8.16.



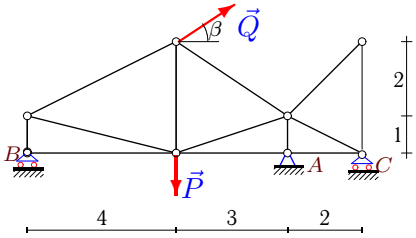
$P = 7$ кН,
$Q = 6$ кН,
$\beta = 30°$.

Задача М8.17.



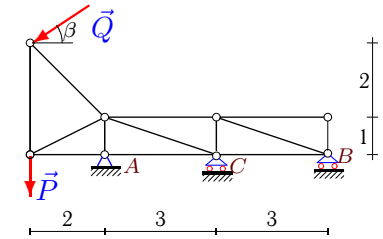
$P = 9$ кН,
$Q = 5$ кН,
$\beta = 30°$.

Задача М8.18.



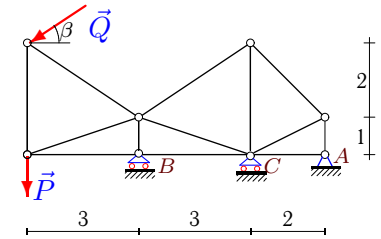
$P = 7$ кН,
$Q = 5$ кН,
$\beta = 30°$.

Задача М8.19.



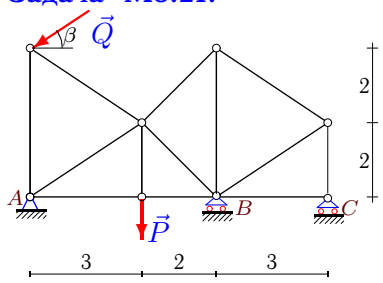
$P = 5$ кН,
$Q = 3$ кН,
$\beta = 30°$.

Задача М8.20.



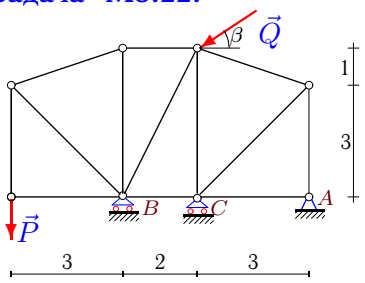
$P = 13$ кН,
$Q = 5$ кН,
$\beta = 15°$.

Задача М8.21. 4



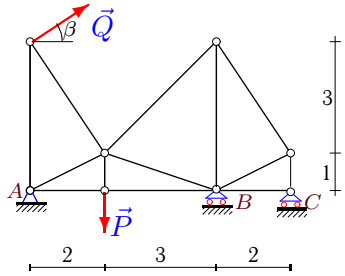
$P = 6$ кН,
$Q = 3$ кН,
$\beta = 30°$.

Задача М8.22. 4



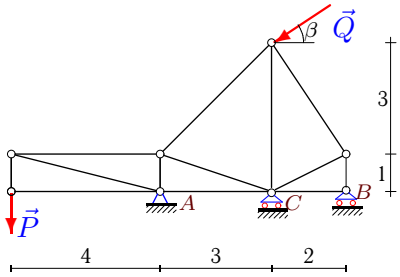
$P = 5$ кН,
$Q = 6$ кН,
$\beta = 30°$.

Задача М8.23. 4



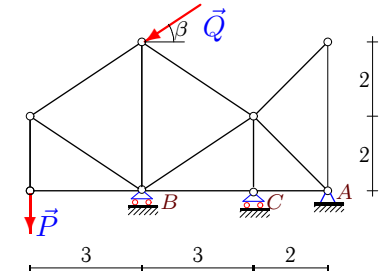
$P = 10$ кН,
$Q = 3$ кН,
$\beta = 45°$.

Задача М8.24. 4



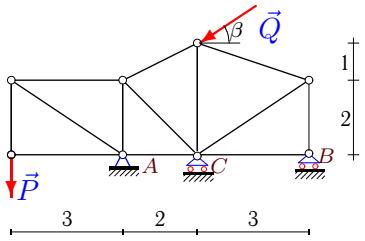
$P = 8$ кН,
$Q = 4$ кН,
$\beta = 15°$.

Задача М8.25. 4



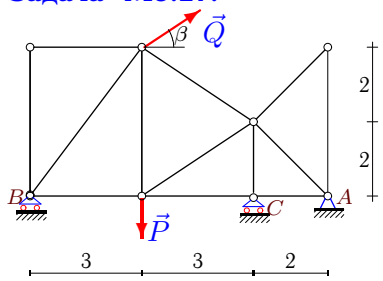
$P = 5$ кН,
$Q = 6$ кН,
$\beta = 30°$.

Задача М8.26. 4



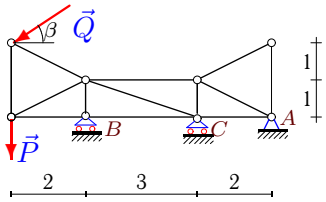
$P = 11$ кН,
$Q = 7$ кН,
$\beta = 45°$.

Задача М8.27. 4



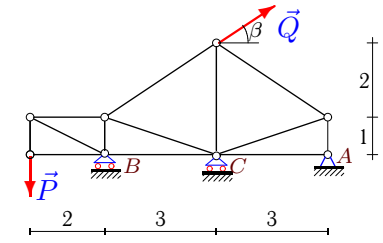
$P = 7$ кН,
$Q = 5$ кН,
$\beta = 30°$.

Задача М8.28. 4



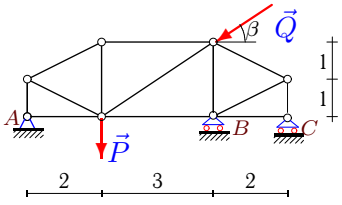
$P = 12$ кН,
$Q = 7$ кН,
$\beta = 15°$.

Задача М8.29. 4



$P = 5$ кН,
$Q = 6$ кН,
$\beta = 30°$.

Задача М8.30. 4



$P = 11$ кН,
$Q = 5$ кН,
$\beta = 45°$.

M8 Ответы.

Расчет статически неопределимой фермы

16.06.2012

	δ_{11}	Δ_{1P}	X_A	Y_A	Y_B	Y_C
1	9.027	-33.871	-2.898	1.631	2.840	3.752
2	25.937	-148.616	4.950	-1.541	9.761	5.730
3	29.811	3.820	-6.761	0.842	10.474	-0.128
4	42.025	-184.138	-2.121	0.152	0.345	4.382
5	3.996	18.187	-7.794	0.866	8.185	-4.552
6	18.002	4.392	-4.830	-3.304	7.254	-0.244
7	6.966	-41.933	8.693	11.056	-4.747	6.020
8	17.285	29.246	-2.828	8.186	-0.322	-1.692
9	31.418	-61.092	-5.796	-1.291	4.794	1.944
10	34.756	35.215	4.243	4.289	8.967	-1.013
11	8.029	-74.135	6.928	-4.483	12.250	9.233
12	36.713	-62.136	-6.928	4.473	0.835	1.692
13	107.583	26.875	-2.828	0.856	7.565	-0.250
14	109.232	7.338	-8.693	9.862	-5.124	-0.067
15	5.792	10.433	2.598	-7.498	20.799	-1.801
16	6.010	-22.917	5.196	-8.682	14.869	3.813
17	5.044	-1.673	-4.330	7.669	-1.501	0.332
18	44.921	-40.352	-4.330	3.272	0.329	0.898
19	29.811	90.324	2.598	11.481	-1.951	-3.030
20	4.601	-6.009	4.830	-12.258	25.246	1.306
21	25.687	27.448	2.598	5.337	3.231	-1.069
22	5.712	-19.758	5.196	-7.340	11.882	3.459
23	18.305	119.854	-2.121	-0.437	14.864	-6.548
24	5.156	13.771	3.864	18.973	-7.267	-2.671
25	7.711	24.583	5.196	-5.244	16.432	-3.188
26	4.121	-2.106	4.950	23.233	-7.794	0.511
27	10.982	-27.510	-4.330	1.974	0.021	2.505
28	16.805	29.756	6.761	-7.167	22.749	-1.771
29	6.194	13.995	-5.196	0.561	3.698	-2.259
30	14.699	6.613	3.536	7.834	7.151	-0.450

M8 файл o8m4B

В первой строке — усилия от действия основной нагрузки, во второй — от единичной вертикальной силы в опоре C.

	U_1	U_2	U_3	V_1	V_2	V_3	V_4	O_1	O_2	O_3	D_1	D_2	D_3
1	0.000 0.000	1.079 -0.625	-2.898 -0.000	-4.247 0.375	2.831 -0.250	-1.325 -0.792	-3.976 0.625	-5.104 0.451	-4.247 0.375	-4.779 0.751	4.477 -0.395	5.712 0.451	4.191 -0.659
2	0.000 0.000	10.462 -1.500	10.462 -1.500	-11.193 0.250	6.891 -0.375	0.000 -1.000	-0.000 0.000	-11.872 0.265	-4.872 0.265	0.000 0.000	8.849 -0.198	-2.179 1.383	-6.163 1.677
3	-2.092 -0.000	-2.092 -0.000	-4.427 -1.500	11.954 -0.000	-10.410 0.500	0.778 -0.500	-0.000 -0.000	-12.189 0.000	-2.335 1.500	-0.000 0.000	2.339 0.000	-2.461 -1.581	-2.461 1.581
4	0.000 0.000	6.549 -1.875	6.549 -1.875	-1.989 0.375	9.032 -0.703	0.000 -1.000	-0.000 0.000	-2.109 0.398	-6.513 0.507	0.000 -0.000	1.572 -0.296	-5.655 1.782	-9.140 1.976
5	0.000 0.000	-13.500 0.000	-7.794 -0.000	9.000 0.000	2.635 0.400	-2.250 -0.500	1.865 0.600	13.500 0.000	10.488 0.361	1.318 0.424	-16.225 0.000	5.737 -0.361	-1.318 -0.424
6	4.576 0.600	4.576 0.600	0.000 0.000	2.904 0.000	5.000 0.000	-0.000 0.625	0.000 -1.000	-5.091 0.000	0.000 -0.839	0.000 -0.791	0.359 -0.849	-8.249 0.270	-0.000 1.061
7	-2.305 -0.143	-0.223 -0.357	0.000 0.000	0.000 0.000	12.776 -0.286	0.112 -0.821	0.447 0.714	0.000 0.000	-6.388 0.143	0.403 0.644	-14.284 0.319	-3.470 0.357	-0.250 -0.399
8	0.000 0.000	-2.675 -1.200	-2.675 -1.200	9.000 0.000	-5.593 0.000	0.000 -1.000	-0.000 -0.000	8.112 0.000	2.364 0.000	0.000 0.000	-5.031 0.000	1.057 1.265	2.990 1.342
9	3.952 0.450	0.000 1.000	0.000 1.000	-0.000 0.000	1.071 0.825	-7.905 1.600	0.000 0.000	0.000 0.000	-4.419 -0.503	0.000 0.000	3.072 -0.750	7.125 -0.992	0.000 -1.414
10	3.103 0.900	0.000 1.500	0.000 0.000	-0.000 0.000	4.897 0.600	-7.346 1.100	0.000 -1.000	0.000 0.000	-7.346 -0.900	-0.000 -1.581	-8.828 -1.082	4.388 -0.849	0.000 1.581
11	11.426 -0.296	11.426 -0.296	8.727 -0.519	-5.732 0.000	13.000 0.000	2.699 -0.778	-0.000 0.000	7.141 0.000	-1.799 0.519	-0.000 -0.000	-14.282 0.370	-3.816 -0.314	-3.243 0.935
12	6.928 0.000	10.386 0.600	-0.928 1.500	-3.457 -0.600	7.543 -0.600	4.000 1.000	-0.619 0.000	-3.457 -0.600	7.856 -1.500	8.327 0.000	4.890 0.849	-13.598 1.082	1.116 -1.803
13	2.828 0.000	-0.000 3.000	-0.000 3.000	-1.006 -0.600	8.957 1.125	-7.166 1.600	-0.000 0.000	-1.067 -0.636	-6.459 -0.811	0.000 -0.000	0.795 0.474	4.006 -2.851	0.000 -3.162
14	20.571 1.200	20.571 1.200	0.000 3.000	15.369 0.000	7.000 0.000	-0.000 1.000	-0.000 0.000	-15.672 -0.000	-0.000 -3.000	-0.000 0.000	-22.999 -1.342	-30.847 1.897	0.000 -3.162
15	0.000 0.000	-2.441 -0.300	2.598 -0.000	10.000 0.000	-2.500 0.000	10.078 -0.400	8.578 0.600	10.308 -0.000	10.000 -0.000	2.441 0.300	-12.500 0.000	-12.598 0.500	-11.268 -0.671
16	-5.250 0.000	-0.172 -0.300	5.196 -0.000	0.000 0.000	-7.000 0.000	3.578 -0.800	7.157 0.400	0.000 0.000	5.250 0.000	6.451 0.361	8.750 0.000	-11.356 0.671	-6.451 -0.361
17	-10.840 -0.000	-6.510 -0.000	0.000 -0.000	5.387 -0.000	-7.802 0.400	-0.579 -0.267	1.302 0.600	-5.204 0.000	1.043 0.481	0.868 0.400	11.426 0.000	5.947 -0.422	-1.565 -0.721
18	0.000 0.000	-4.330 2.000	0.000 2.000	-0.073 -0.286	5.500 0.444	-4.427 1.286	0.000 0.000	-0.109 -0.426	-5.321 -0.458	-0.000 0.000	0.100 0.393	4.667 -1.707	0.000 -2.236
19	-18.196 0.000	-20.794 0.000	-10.397 -1.500	-4.098 0.000	-9.966 0.500	-3.466 -0.500	0.000 0.000	3.674 0.000	10.397 1.500	-0.000 0.000	20.344 -0.000	10.960 -1.581	10.960 1.581
20	-52.542 0.000	-52.542 0.000	4.830 -0.000	-4.514 0.000	-25.768 0.400	-12.749 -0.667	11.474 0.600	5.804 0.000	9.194 0.481	10.818 0.566	55.384 0.000	52.411 -0.422	-8.552 -0.447
21	1.522 0.900	1.522 0.900	-0.000 0.000	-3.232 -0.000	6.000 0.000	0.000 1.250	0.000 -1.000	3.122 0.000	0.000 -1.061	0.000 -0.901	-4.951 -1.082	-2.152 -0.212	-0.000 0.901
22	0.000 0.000	0.728 -0.300	5.196 -0.000	5.000 0.000	-1.250 0.000	4.468 -0.700	5.957 0.400	3.953 0.000	3.750 0.000	4.709 0.316	-5.303 -0.000	-10.014 0.671	-6.318 -0.424
23	17.091 0.800	17.091 0.800	-0.000 0.000	5.303 0.000	10.000 0.000	0.000 1.250	0.000 -1.000	-3.824 -0.000	0.000 -0.707	-0.000 -0.901	-16.737 -0.894	-18.016 -0.316	-0.000 0.559
24	0.000 0.000	-35.864 -0.000	0.000 -0.000	8.000 0.000	-9.905 0.400	-8.259 -0.750	8.870 0.600	32.000 0.000	0.808 0.424	7.995 0.541	-32.985 -0.000	33.129 -0.316	-4.958 -0.335
25	0.000 0.000	-1.961 -0.600	-1.961 -0.600	5.000 0.000	-11.464 0.000	0.000 -1.000	0.000 0.000	4.507 0.000	10.752 0.000	0.000 -0.000	-4.507 0.000	-2.150 0.721	10.121 0.849
26	0.000 0.000	-21.450 0.000	0.000 0.000	11.000 0.000	-12.540 0.600	-8.800 -0.333	7.590 0.400	16.500 -0.000	2.952 0.447	8.001 0.422	-19.831 0.000	19.601 -0.566	-9.122 -0.481
27	0.486 -0.188	-0.478 -0.750	-0.478 -0.750	0.000 -0.000	6.358 -0.375	0.000 -1.000	0.000 0.000	0.000 0.000	-5.788 0.225	0.000 0.000	-0.809 0.313	1.158 0.676	-5.448 1.061
28	-34.385 0.000	-34.385 0.000	-9.697 -1.200	-5.192 0.000	-22.041 0.400	-8.229 -0.600	0.000 0.000	7.560 0.000	16.459 1.200	-0.000 0.000	38.444 -0.000	26.023 -1.265	18.401 1.342
29	0.000 0.000	-10.000 0.000	-5.196 0.000	5.000 0.000	2.431 0.500	-1.222 -0.667	0.569 0.500	10.000 -0.000	6.928 0.601	0.683 0.601	-11.180 0.000	4.464 -0.527	-0.599 -0.527
30	-3.536 0.000	0.000 1.000	0.000 -0.000	-8.014 -0.400	4.007 0.200	-6.521 0.900	0.000 -1.000	-8.960 -0.447	-8.014 -0.400	0.000 -1.118	8.960 0.447	5.383 -0.721	0.000 1.118