

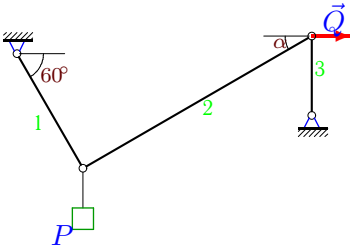
## Равновесие цепи из 3 звеньев

Найти угол  $\alpha$  в положении равновесия цепи и усилия в стержнях.

Кирсанов М.Н. **Решebник. Теоретическая механика**/Под ред. А. И. Кириллова.– М.:ФИЗМАТЛИТ, 2008.– 384 с. (с.21.)

**Задача 2.1.**

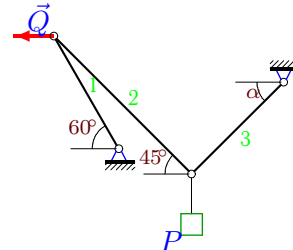
6



$$P=9 \text{ кН}, Q=1 \text{ кН}.$$

**Задача 2.2.**

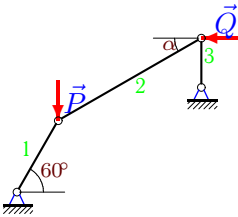
6



$$P=29 \text{ кН}, Q=10 \text{ кН}.$$

**Задача 2.3.**

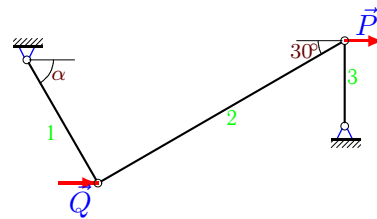
6



$$P=16 \text{ кН}, Q=10 \text{ кН}.$$

**Задача 2.4.**

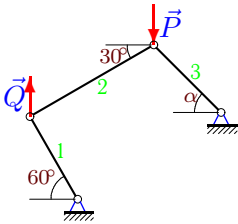
6



$$P=2 \text{ кН}, Q=1 \text{ кН}.$$

**Задача 2.5.**

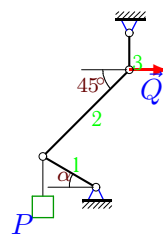
6



$$P=7 \text{ кН}, Q=10 \text{ кН}.$$

**Задача 2.6.**

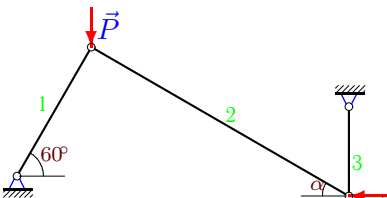
6



$$P=16 \text{ кН}, Q=10 \text{ кН}.$$

**Задача 2.7.**

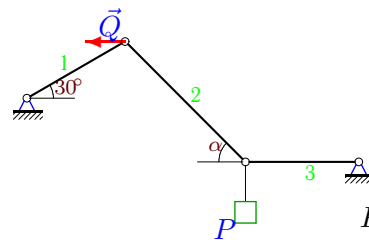
6



$$P=27 \text{ кН}, Q=10 \text{ кН}.$$

**Задача 2.8.**

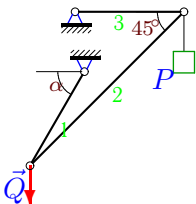
6



$$P=22 \text{ кН}, Q=60 \text{ кН}.$$

**Задача 2.9.**

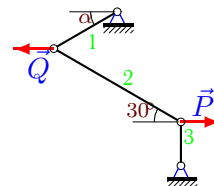
6



$$P=12 \text{ кН}, Q=10 \text{ кН}.$$

**Задача 2.10.**

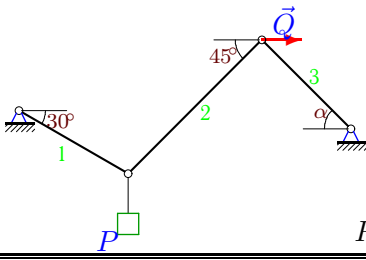
6



$$P=16 \text{ кН}, Q=30 \text{ кН}.$$

**Задача 2.11.**

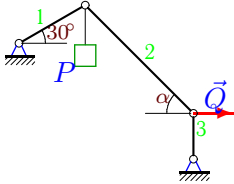
6



$P=19 \text{ кН}, Q=20 \text{ кН}.$

**Задача 2.13.**

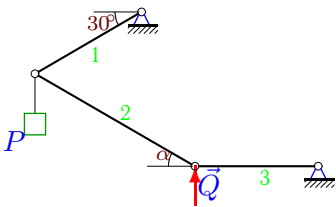
6



$P=7 \text{ кН}, Q=1 \text{ кН}.$

**Задача 2.15.**

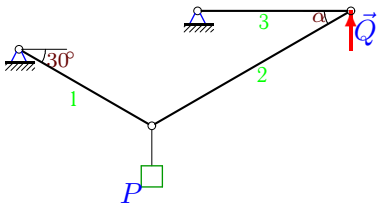
6



$P=4 \text{ кН}, Q=1 \text{ кН}.$

**Задача 2.17.**

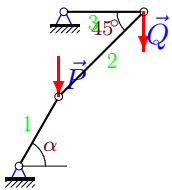
6



$P=3 \text{ кН}, Q=1 \text{ кН}.$

**Задача 2.19.**

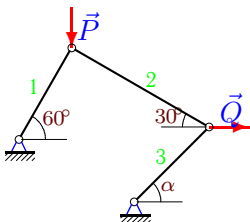
6



$P=27 \text{ кН}, Q=40 \text{ кН}.$

**Задача 2.21.**

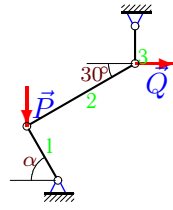
6



$P=5 \text{ кН}, Q=1 \text{ кН}.$

**Задача 2.12.**

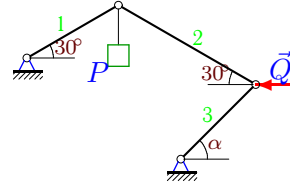
6



$P=12 \text{ кН}, Q=10 \text{ кН}.$

**Задача 2.14.**

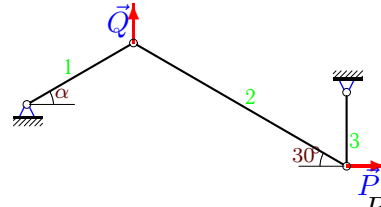
6



$P=27 \text{ кН}, Q=40 \text{ кН}.$

**Задача 2.16.**

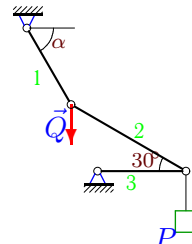
6



$P=10 \text{ кН}, Q=10 \text{ кН}.$

**Задача 2.18.**

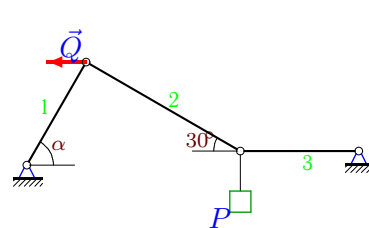
6



$P=16 \text{ кН}, Q=30 \text{ кН}.$

**Задача 2.20.**

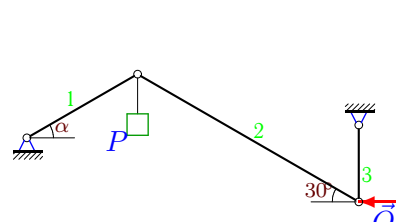
6



$P=9 \text{ кН}, Q=20 \text{ кН}.$

**Задача 2.22.**

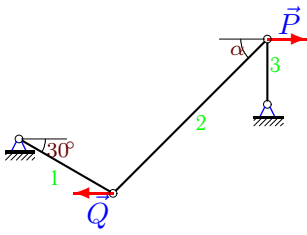
6



$P=26 \text{ кН}, Q=20 \text{ кН}.$

**Задача 2.23.**

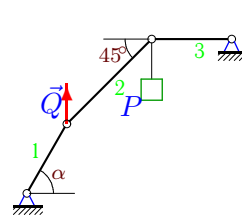
6



$P=17 \text{ кН}, Q=50 \text{ кН}.$

**Задача 2.24.**

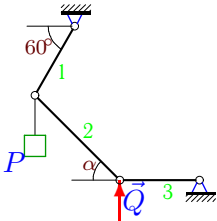
6



$P=2 \text{ кН}, Q=1 \text{ кН}.$

**Задача 2.25.**

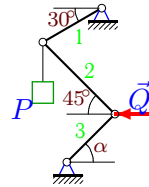
6



$P=19 \text{ кН}, Q=10 \text{ кН}.$

**Задача 2.26.**

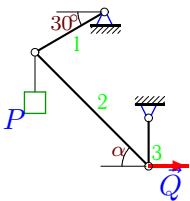
6



$P=22 \text{ кН}, Q=30 \text{ кН}.$

**Задача 2.27.**

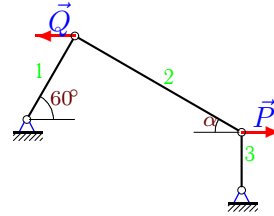
6



$P=2 \text{ кН}, Q=1 \text{ кН}.$

**Задача 2.28.**

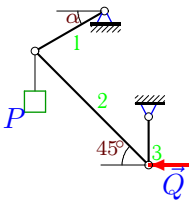
6



$P=5 \text{ кН}, Q=10 \text{ кН}.$

**Задача 2.29.**

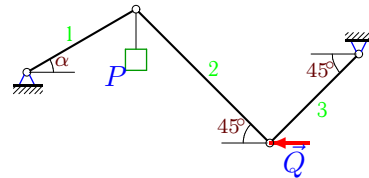
6



$P=33 \text{ кН}, Q=20 \text{ кН}.$

**Задача 2.30.**

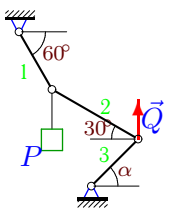
6



$P=9 \text{ кН}, Q=10 \text{ кН}.$

**Задача 2.31.**

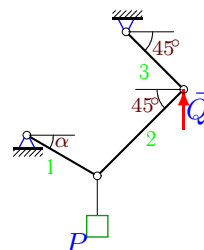
6



$P=3 \text{ кН}, Q=1 \text{ кН}.$

**Задача 2.32.**

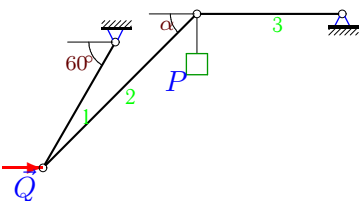
6



$P=10 \text{ кН}, Q=10 \text{ кН}.$

**Задача 2.33.**

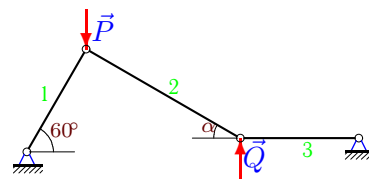
6



$P=33 \text{ кН}, Q=10 \text{ кН}.$

**Задача 2.34.**

6



$P=30 \text{ кН}, Q=10 \text{ кН}.$

**Равновесие цепи из 3 звеньев**

	$\operatorname{tg}\alpha$	$\alpha$	$S_1$	$S_2$	$S_3$
1	7.268	1.434	2.000	7.336	-7.268
2	0.226	0.222	-27.321	33.461	24.255
3	0.132	0.131	-20.000	-10.087	1.321
4	0.385	0.367	3.215	2.309	-1.155
5	1.039	0.805	8.660	-5.000	-6.245
6	0.600	0.540	-11.662	14.142	10.000
7	0.968	0.769	-20.000	-13.917	9.679
8	1.005	0.788	-44.000	31.038	21.895
9	1.833	1.071	25.060	-16.971	12.000
10	0.660	0.583	16.773	18.475	9.238
11	1.514	0.987	13.909	17.035	-14.435
12	0.623	0.557	-11.780	11.547	5.774
13	7.577	1.440	1.155	7.643	-7.577
14	0.812	0.682	-27.000	-27.000	-21.410
15	0.192	0.190	6.000	-5.292	-5.196
16	0.423	0.400	10.856	11.547	-5.774
17	0.289	0.281	4.000	3.606	-3.464
18	1.660	1.029	53.703	32.000	-27.713
19	1.675	1.033	-78.032	-56.569	40.000
20	2.040	1.115	-10.023	18.000	15.588
21	0.395	0.376	-4.330	-2.500	3.403
22	0.723	0.626	-24.676	-23.094	11.547
23	1.121	0.842	-38.105	25.534	-19.053
24	0.500	0.464	-2.236	-2.828	-2.000
25	1.925	1.092	10.392	-11.269	-5.196
26	0.869	0.715	16.105	-19.725	-21.265
27	2.577	1.201	-1.155	2.765	2.577
28	1.732	1.047	-10.000	10.000	8.660
29	0.650	0.576	23.854	-28.284	20.000
30	0.800	0.675	-6.403	-7.071	7.071
31	0.962	0.766	5.196	3.000	-3.606
32	1.000	0.785	7.071	7.071	-7.071
33	1.136	0.849	38.105	-43.966	-29.053
34	0.866	0.714	-23.094	-15.275	-11.547