

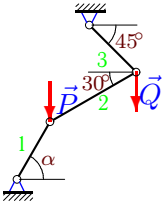
Равновесие цепи из 3 звеньев

Найти угол α 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.

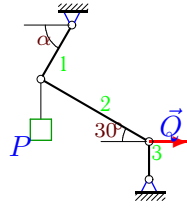
7



$$P=19 \text{ кН}, Q=30 \text{ кН}.$$

Задача 2.2.

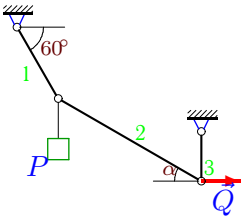
7



$$P=1 \text{ кН}, Q=1 \text{ кН}.$$

Задача 2.3.

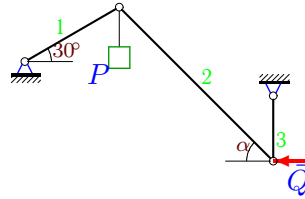
7



$$P=33 \text{ кН}, Q=30 \text{ кН}.$$

Задача 2.4.

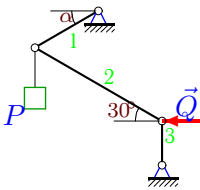
7



$$P=22 \text{ кН}, Q=10 \text{ кН}.$$

Задача 2.5.

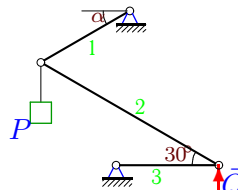
7



$$P=14 \text{ кН}, Q=10 \text{ кН}.$$

Задача 2.6.

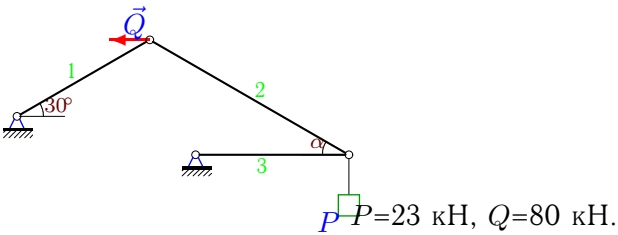
7



$$P=17 \text{ кН}, Q=10 \text{ кН}.$$

Задача 2.7.

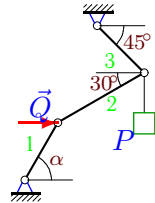
7



$$P=23 \text{ кН}, Q=80 \text{ кН}.$$

Задача 2.8.

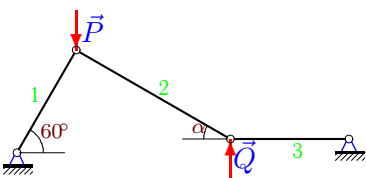
7



$$P=5 \text{ кН}, Q=1 \text{ кН}.$$

Задача 2.9.

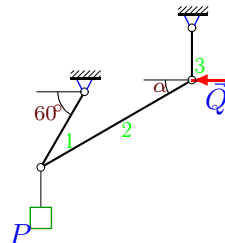
7



$$P=4 \text{ кН}, Q=1 \text{ кН}.$$

Задача 2.10.

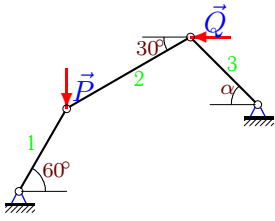
7



$$P=27 \text{ кН}, Q=20 \text{ кН}.$$

Задача 2.11.

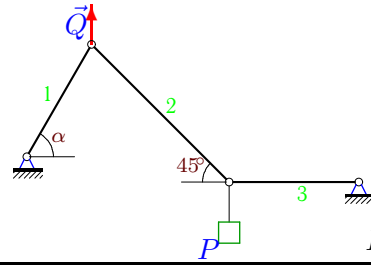
7



$P=13 \text{ кН}, Q=20 \text{ кН}.$

Задача 2.12.

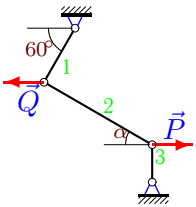
7



$P=11 \text{ кН}, Q=30 \text{ кН}.$

Задача 2.13.

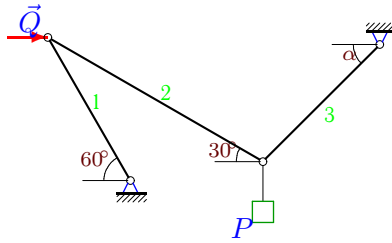
7



$P=17 \text{ кН}, Q=20 \text{ кН}.$

Задача 2.14.

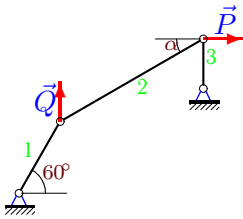
7



$P=4 \text{ кН}, Q=1 \text{ кН}.$

Задача 2.15.

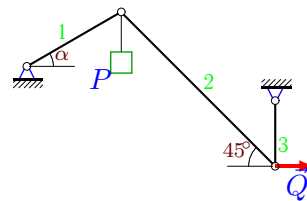
7



$P=14 \text{ кН}, Q=20 \text{ кН}.$

Задача 2.16.

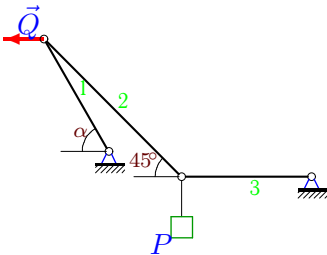
7



$P=5 \text{ кН}, Q=1 \text{ кН}.$

Задача 2.17.

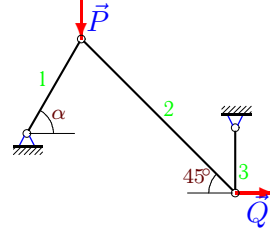
7



$P=26 \text{ кН}, Q=10 \text{ кН}.$

Задача 2.18.

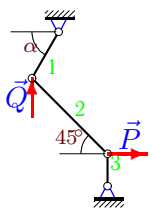
7



$P=2 \text{ кН}, Q=1 \text{ кН}.$

Задача 2.19.

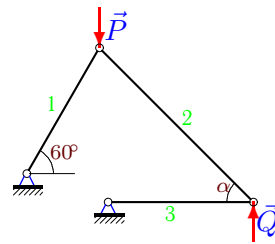
7



$P=21 \text{ кН}, Q=60 \text{ кН}.$

Задача 2.20.

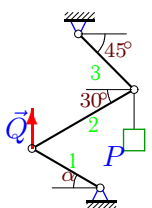
7



$P=2 \text{ кН}, Q=1 \text{ кН}.$

Задача 2.21.

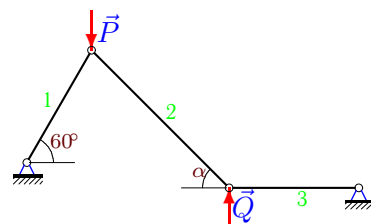
7



$P=32 \text{ кН}, Q=20 \text{ кН}.$

Задача 2.22.

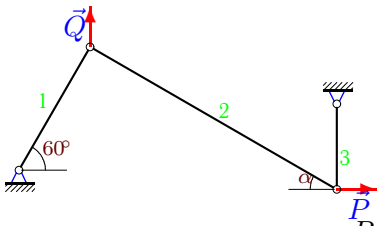
7



$P=18 \text{ кН}, Q=10 \text{ кН}.$

Задача 2.23.

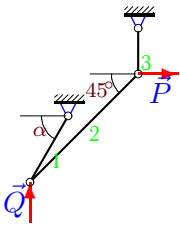
7



$P=29 \text{ кН}, Q=70 \text{ кН}.$

Задача 2.25.

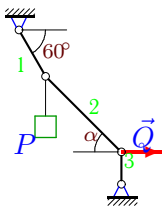
7



$P=28 \text{ кН}, Q=20 \text{ кН}.$

Задача 2.27.

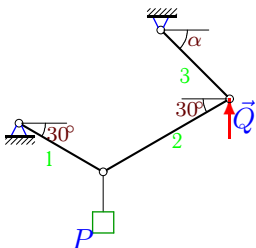
7



$P=4 \text{ кН}, Q=10 \text{ кН}.$

Задача 2.29.

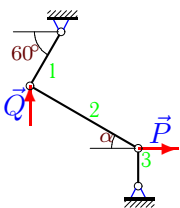
7



$P=3 \text{ кН}, Q=1 \text{ кН}.$

Задача 2.31.

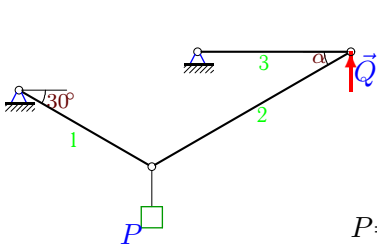
7



$P=12 \text{ кН}, Q=30 \text{ кН}.$

Задача 2.33.

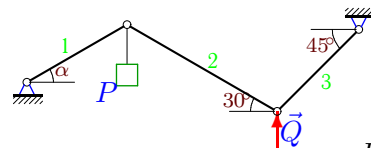
7



$P=30 \text{ кН}, Q=20 \text{ кН}.$

Задача 2.24.

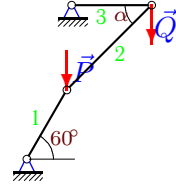
7



$P=28 \text{ кН}, Q=40 \text{ кН}.$

Задача 2.26.

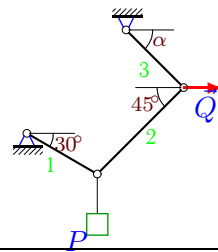
7



$P=20 \text{ кН}, Q=30 \text{ кН}.$

Задача 2.28.

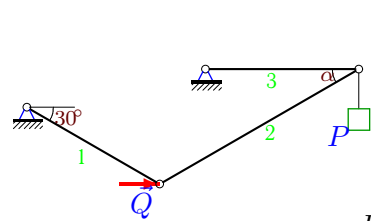
7



$P=15 \text{ кН}, Q=20 \text{ кН}.$

Задача 2.30.

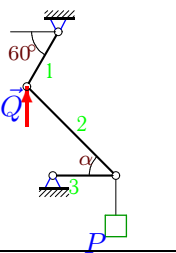
7



$P=25 \text{ кН}, Q=90 \text{ кН}.$

Задача 2.32.

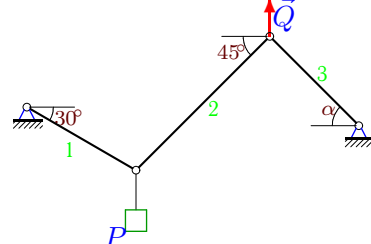
7



$P=14 \text{ кН}, Q=40 \text{ кН}.$

Задача 2.34.

7



$P=3 \text{ кН}, Q=1 \text{ кН}.$

Равновесие цепи из 3 звеньев

| | $\operatorname{tg}\alpha$ | α | S_1 | S_2 | S_3 |
|----|---------------------------|----------|---------|---------|---------|
| 1 | 1.576 | 1.005 | -35.505 | -21.962 | 26.897 |
| 2 | 1.577 | 1.006 | -1.868 | 1.155 | 0.577 |
| 3 | 0.632 | 0.564 | 60.000 | 35.490 | -18.962 |
| 4 | 1.623 | 1.018 | -11.547 | -19.060 | 16.226 |
| 5 | 0.823 | 0.688 | 12.949 | -11.547 | -5.774 |
| 6 | 0.404 | 0.384 | 18.682 | -20.000 | 17.321 |
| 7 | 0.573 | 0.520 | -46.000 | 46.282 | -40.163 |
| 8 | 0.843 | 0.701 | -2.839 | -3.660 | 4.483 |
| 9 | 0.577 | 0.524 | -3.464 | -2.000 | -1.732 |
| 10 | 0.382 | 0.365 | 40.000 | -21.410 | -7.641 |
| 11 | 0.744 | 0.639 | -22.517 | -13.000 | 10.893 |
| 12 | 1.727 | 1.046 | 21.954 | 15.556 | 11.000 |
| 13 | 0.306 | 0.297 | 6.000 | 17.776 | 5.196 |
| 14 | 3.244 | 1.272 | 1.000 | -1.732 | -5.092 |
| 15 | 0.303 | 0.295 | 28.000 | 14.631 | -4.249 |
| 16 | 6.000 | 1.406 | 6.083 | 1.414 | -1.000 |
| 17 | 1.625 | 1.019 | -30.529 | 36.770 | 26.000 |
| 18 | 3.000 | 1.249 | 3.162 | 1.414 | -1.000 |
| 19 | 1.857 | 1.077 | -44.294 | 29.698 | 21.000 |
| 20 | 1.732 | 1.047 | -1.155 | -1.155 | 0.577 |
| 21 | 0.408 | 0.388 | 21.915 | -23.426 | 28.690 |
| 22 | 2.165 | 1.138 | -9.238 | -11.015 | -4.619 |
| 23 | 0.682 | 0.598 | 58.000 | 35.098 | -19.771 |
| 24 | 0.527 | 0.485 | -28.663 | -29.282 | -35.863 |
| 25 | 1.714 | 1.043 | -55.570 | 39.598 | 28.000 |
| 26 | 1.039 | 0.805 | -57.735 | -41.633 | 28.868 |
| 27 | 1.332 | 0.927 | 20.000 | 16.656 | 13.321 |
| 28 | 0.907 | 0.736 | 10.981 | 13.449 | 14.159 |
| 29 | 0.192 | 0.190 | 3.000 | 3.000 | -2.646 |
| 30 | 0.535 | 0.492 | 50.000 | -52.970 | 46.699 |
| 31 | 0.768 | 0.655 | -24.000 | 15.130 | 9.215 |
| 32 | 0.933 | 0.751 | -30.022 | 20.526 | -15.011 |
| 33 | 1.155 | 0.857 | 20.000 | 26.458 | -17.321 |
| 34 | 0.474 | 0.443 | 2.196 | 2.690 | 2.105 |