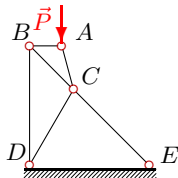


Простая стержневая система.

Кирсанов М.Н. **Решебник. Теоретическая механика** с. 14.

Вариант 1

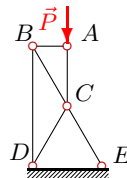
C1.



$$\begin{aligned}
 P &= 1 \text{ кН}, \\
 \angle ACB &= 30^\circ, \\
 \angle ABC &= 45^\circ, \\
 \angle BDC &= 30^\circ, \\
 \angle BCD &= 105^\circ, \\
 \angle CDE &= 60^\circ, \\
 \angle CED &= 45^\circ.
 \end{aligned}$$

Вариант 2

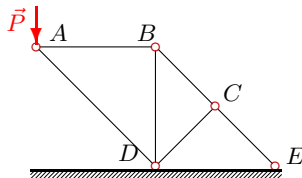
C1.



$$\begin{aligned}
 P &= 2 \text{ кН}, \\
 \angle ACB &= 30^\circ, \\
 \angle ABC &= 60^\circ, \\
 \angle BDC &= 30^\circ, \\
 \angle BCD &= 120^\circ, \\
 \angle CDE &= 60^\circ, \\
 \angle CED &= 60^\circ.
 \end{aligned}$$

Вариант 3

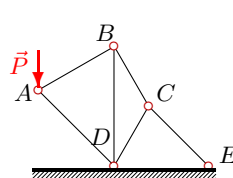
C1.



$$\begin{aligned}
 P &= 3 \text{ кН}, \\
 \angle ABD &= 90^\circ, \\
 \angle ADB &= 45^\circ, \\
 \angle BDC &= 45^\circ, \\
 \angle BCD &= 90^\circ, \\
 \angle CDE &= 45^\circ, \\
 \angle CED &= 45^\circ.
 \end{aligned}$$

Вариант 4

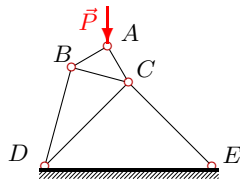
C1.



$$\begin{aligned}
 P &= 4 \text{ кН}, \\
 \angle ABD &= 60^\circ, \\
 \angle ADB &= 45^\circ, \\
 \angle BDC &= 30^\circ, \\
 \angle BCD &= 120^\circ, \\
 \angle CDE &= 60^\circ, \\
 \angle CED &= 45^\circ.
 \end{aligned}$$

Вариант 5

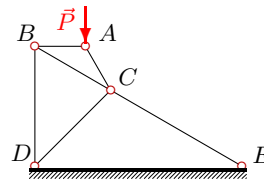
C1.



$$\begin{aligned}
 P &= 5 \text{ кН}, \\
 \angle ACB &= 45^\circ, \\
 \angle ABC &= 45^\circ, \\
 \angle BDC &= 30^\circ, \\
 \angle BCD &= 60^\circ, \\
 \angle CDE &= 45^\circ, \\
 \angle CED &= 45^\circ.
 \end{aligned}$$

Вариант 6

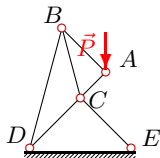
C1.



$$\begin{aligned}
 P &= 6 \text{ кН}, \\
 \angle ACB &= 30^\circ, \\
 \angle ABC &= 30^\circ, \\
 \angle BDC &= 45^\circ, \\
 \angle BCD &= 75^\circ, \\
 \angle CDE &= 45^\circ, \\
 \angle CED &= 30^\circ.
 \end{aligned}$$

Вариант 7

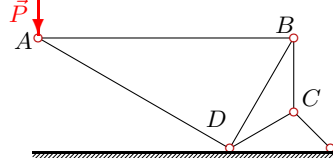
C1.



$$\begin{aligned}
 P &= 7 \text{ кН}, \\
 \angle ACB &= 60^\circ, \\
 \angle ABC &= 30^\circ, \\
 \angle BDC &= 30^\circ, \\
 \angle BCD &= 120^\circ, \\
 \angle CDE &= 45^\circ, \\
 \angle CED &= 45^\circ.
 \end{aligned}$$

Вариант 8

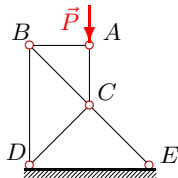
C1.



$$\begin{aligned}
 P &= 8 \text{ кН}, \\
 \angle ABD &= 60^\circ, \\
 \angle ADB &= 90^\circ, \\
 \angle BDC &= 30^\circ, \\
 \angle BCD &= 120^\circ, \\
 \angle CDE &= 30^\circ, \\
 \angle CED &= 45^\circ.
 \end{aligned}$$

Вариант 9

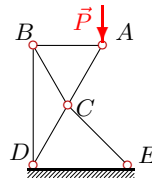
C1.



$$\begin{aligned}
 P &= 9 \text{ кН}, \\
 \angle ACB &= 45^\circ, \\
 \angle ABC &= 45^\circ, \\
 \angle BDC &= 45^\circ, \\
 \angle BCD &= 90^\circ, \\
 \angle CDE &= 45^\circ, \\
 \angle CED &= 45^\circ.
 \end{aligned}$$

Вариант 10

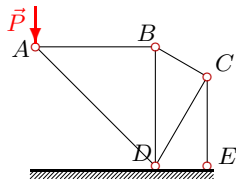
C1.



$$\begin{aligned}
 P &= 10 \text{ кН}, \\
 \angle ACB &= 60^\circ, \\
 \angle ABC &= 60^\circ, \\
 \angle BDC &= 30^\circ, \\
 \angle BCD &= 120^\circ, \\
 \angle CDE &= 60^\circ, \\
 \angle CED &= 45^\circ.
 \end{aligned}$$

Вариант 11

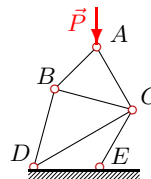
C1.



$$\begin{aligned}
 P &= 11 \text{ кН}, \\
 \angle ABD &= 90^\circ, \\
 \angle ADB &= 45^\circ, \\
 \angle BDC &= 30^\circ, \\
 \angle BCD &= 90^\circ, \\
 \angle CDE &= 60^\circ, \\
 \angle CED &= 90^\circ.
 \end{aligned}$$

Вариант 12

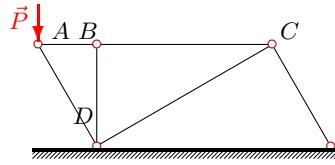
C1.



$$\begin{aligned}
 P &= 12 \text{ кН}, \\
 \angle ACB &= 45^\circ, \\
 \angle ABC &= 60^\circ, \\
 \angle BDC &= 45^\circ, \\
 \angle BCD &= 45^\circ, \\
 \angle CDE &= 30^\circ, \\
 \angle CED &= 120^\circ.
 \end{aligned}$$

Вариант 13

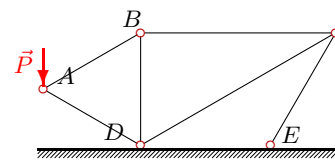
C1.



$P = 13 \text{ кН}$,
 $\angle ABD = 90^\circ$,
 $\angle ADB = 30^\circ$,
 $\angle BDC = 60^\circ$,
 $\angle BCD = 30^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 60^\circ$.

Вариант 14

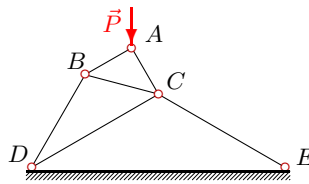
C1.



$P = 14 \text{ кН}$,
 $\angle ABD = 60^\circ$,
 $\angle ADB = 60^\circ$,
 $\angle BDC = 60^\circ$,
 $\angle BCD = 30^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 120^\circ$.

Вариант 15

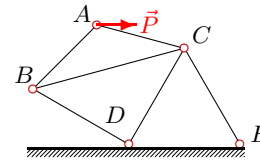
C1.



$P = 15 \text{ кН}$,
 $\angle ACB = 45^\circ$,
 $\angle ABC = 45^\circ$,
 $\angle BDC = 30^\circ$,
 $\angle BCD = 45^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 30^\circ$.

Вариант 16

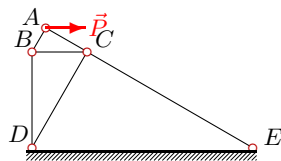
C1.



$P = 16 \text{ кН}$,
 $\angle ACB = 30^\circ$,
 $\angle ABC = 30^\circ$,
 $\angle BDC = 90^\circ$,
 $\angle BCD = 45^\circ$,
 $\angle CDE = 60^\circ$,
 $\angle CED = 60^\circ$.

Вариант 17

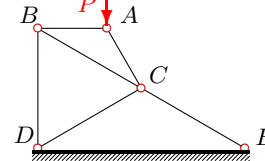
C1.



$P = 17 \text{ кН}$,
 $\angle ACB = 30^\circ$,
 $\angle ABC = 60^\circ$,
 $\angle BDC = 30^\circ$,
 $\angle BCD = 60^\circ$,
 $\angle CDE = 60^\circ$,
 $\angle CED = 30^\circ$.

Вариант 18

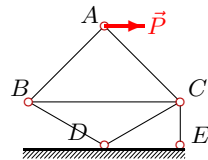
C1.



$P = 18 \text{ кН}$,
 $\angle ACB = 30^\circ$,
 $\angle ABC = 30^\circ$,
 $\angle BDC = 60^\circ$,
 $\angle BCD = 60^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 30^\circ$.

Вариант 19

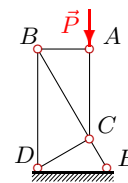
C1.



$P = 19 \text{ кН}$,
 $\angle ACB = 45^\circ$,
 $\angle ABC = 45^\circ$,
 $\angle BDC = 120^\circ$,
 $\angle BCD = 30^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 90^\circ$.

Вариант 20

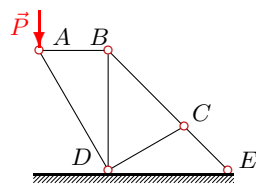
C1.



$P = 20 \text{ кН}$,
 $\angle ACB = 30^\circ$,
 $\angle ABC = 60^\circ$,
 $\angle BDC = 60^\circ$,
 $\angle BCD = 90^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 60^\circ$.

Вариант 21

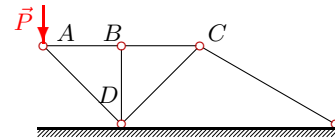
C1.



$P = 21 \text{ кН}$,
 $\angle ABD = 90^\circ$,
 $\angle ADB = 30^\circ$,
 $\angle BDC = 60^\circ$,
 $\angle BCD = 75^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 45^\circ$.

Вариант 22

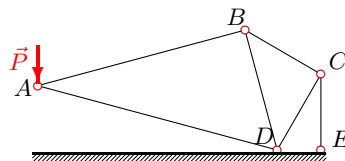
C1.



$P = 22 \text{ кН}$,
 $\angle ABD = 90^\circ$,
 $\angle ADB = 45^\circ$,
 $\angle BDC = 45^\circ$,
 $\angle BCD = 45^\circ$,
 $\angle CDE = 45^\circ$,
 $\angle CED = 30^\circ$.

Вариант 23

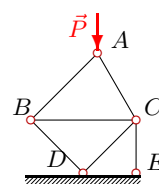
C1.



$P = 23 \text{ кН}$,
 $\angle ABD = 90^\circ$,
 $\angle ADB = 60^\circ$,
 $\angle BDC = 45^\circ$,
 $\angle BCD = 90^\circ$,
 $\angle CDE = 60^\circ$,
 $\angle CED = 90^\circ$.

Вариант 24

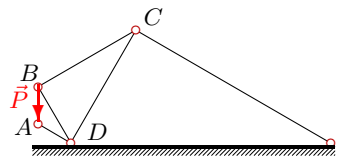
C1.



$P = 24 \text{ кН}$,
 $\angle ACB = 60^\circ$,
 $\angle ABC = 45^\circ$,
 $\angle BDC = 90^\circ$,
 $\angle BCD = 45^\circ$,
 $\angle CDE = 45^\circ$,
 $\angle CED = 90^\circ$.

Вариант 25

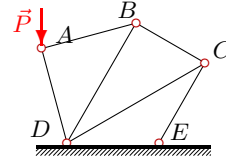
C1.



$P = 25 \text{ кН}$,
 $\angle ABD = 30^\circ$,
 $\angle ADB = 30^\circ$,
 $\angle BDC = 60^\circ$,
 $\angle BCD = 30^\circ$,
 $\angle CDE = 60^\circ$,
 $\angle CED = 30^\circ$.

Вариант 26

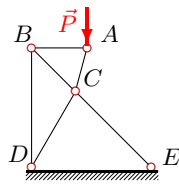
C1.



$P = 26 \text{ кН}$,
 $\angle ABD = 45^\circ$,
 $\angle ADB = 45^\circ$,
 $\angle BDC = 30^\circ$,
 $\angle BCD = 60^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 120^\circ$.

Вариант 27

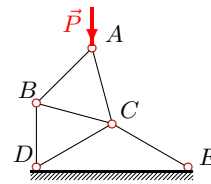
C1.



$P = 27 \text{ кН}$,
 $\angle ACB = 60^\circ$,
 $\angle ABC = 45^\circ$,
 $\angle BDC = 30^\circ$,
 $\angle BCD = 105^\circ$,
 $\angle CDE = 60^\circ$,
 $\angle CED = 45^\circ$.

Вариант 28

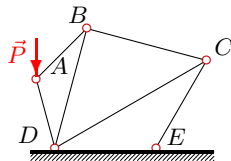
C1.



$P = 28 \text{ кН}$,
 $\angle ACB = 60^\circ$,
 $\angle ABC = 60^\circ$,
 $\angle BDC = 60^\circ$,
 $\angle BCD = 45^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 30^\circ$.

Вариант 29

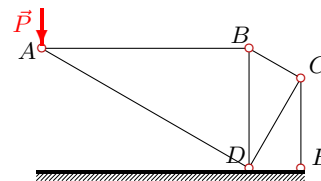
C1.



$P = 29 \text{ кН}$,
 $\angle ABD = 30^\circ$,
 $\angle ADB = 30^\circ$,
 $\angle BDC = 45^\circ$,
 $\angle BCD = 45^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 120^\circ$.

Вариант 30

C1.



$P = 30 \text{ кН}$,
 $\angle ABD = 90^\circ$,
 $\angle ADB = 60^\circ$,
 $\angle BDC = 30^\circ$,
 $\angle BCD = 90^\circ$,
 $\angle CDE = 60^\circ$,
 $\angle CED = 90^\circ$.

Ответы

	S_{AB}	S_{AC}	S_{AD}	S_{BC}	S_{BD}	S_{CD}	S_{CE}
1	-0.268	-1.035	—	0.379	-0.268	-0.536	-0.379
2	0.000	-2.000	—	-0.000	0.000	-1.155	-1.155
3	3.000	—	-4.243	4.243	-3.000	0.000	4.243
4	2.928	—	-3.586	5.072	-5.856	1.359	4.547
5	-2.500	-4.330	—	1.768	-1.768	-2.005	-2.652
6	-3.464	-6.928	—	4.000	-2.000	-3.586	-2.928
7	4.950	-4.950	—	-8.573	4.950	-9.236	-7.425
8	13.856	—	-16.000	24.000	-27.713	17.569	21.518
9	0.000	-9.000	—	-0.000	0.000	-6.364	-6.364
10	5.774	-11.547	—	-11.547	10.000	-14.641	-10.353
11	11.000	—	-15.556	12.702	-6.351	-22.000	25.403
12	-6.212	-8.785	—	3.106	-5.379	9.215	-13.177
13	7.506	—	-15.011	7.506	0.000	-6.500	3.753
14	14.000	—	-14.000	12.124	-7.000	-21.000	12.124
15	-7.500	-12.990	—	3.882	-5.490	-8.660	-11.830
16	4.782	-13.064	—	-6.532	3.381	17.952	-19.904
17	8.500	-14.722	—	-4.250	7.361	2.125	-18.403
18	-10.392	-20.785	—	12.000	-6.000	-12.000	-12.000
19	13.435	-13.435	—	-25.954	19.000	40.939	-29.970
20	0.000	-20.000	—	-0.000	0.000	-10.000	-17.321
21	12.124	—	-24.249	17.146	-12.124	0.000	17.146
22	22.000	—	-31.113	22.000	0.000	-11.388	16.105
23	44.433	—	-44.433	62.837	-44.433	-108.837	125.674
24	-12.423	-17.569	—	17.569	-12.423	-12.423	-6.431
25	25.000	—	0.000	12.500	-21.651	-10.825	6.250
26	6.729	—	-25.114	4.758	-4.758	-9.517	8.242
27	7.235	-27.952	—	-10.231	7.235	-25.061	-17.721
28	-8.368	-22.862	—	6.126	-7.503	-20.497	-20.497
29	8.667	—	-23.678	4.333	-7.506	-8.372	6.128
30	51.962	—	-60.000	60.000	-30.000	-103.923	120.000