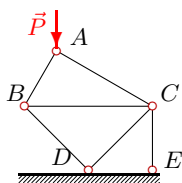


## Простая стержневая система.

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

### Вариант 1

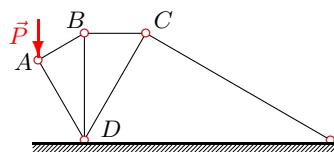
C1.



$P = 1 \text{ кН}$ ,  
 $\angle ACB = 30^\circ$ ,  
 $\angle ABC = 60^\circ$ ,  
 $\angle BDC = 90^\circ$ ,  
 $\angle BCD = 45^\circ$ ,  
 $\angle CDE = 45^\circ$ ,  
 $\angle CED = 90^\circ$ .

### Вариант 2

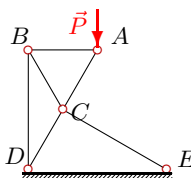
C1.



$P = 2 \text{ кН}$ ,  
 $\angle ABD = 60^\circ$ ,  
 $\angle ADB = 30^\circ$ ,  
 $\angle BDC = 30^\circ$ ,  
 $\angle BCD = 60^\circ$ ,  
 $\angle CDE = 60^\circ$ ,  
 $\angle CED = 30^\circ$ .

### Вариант 3

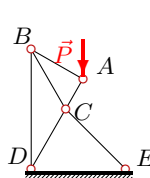
C1.



$P = 3 \text{ кН}$ ,  
 $\angle ACB = 60^\circ$ ,  
 $\angle ABC = 60^\circ$ ,  
 $\angle BDC = 30^\circ$ ,  
 $\angle BCD = 120^\circ$ ,  
 $\angle CDE = 60^\circ$ ,  
 $\angle CED = 30^\circ$ .

### Вариант 4

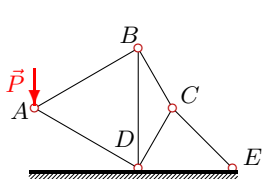
C1.



$P = 4 \text{ кН}$ ,  
 $\angle ACB = 60^\circ$ ,  
 $\angle ABC = 30^\circ$ ,  
 $\angle BDC = 30^\circ$ ,  
 $\angle BCD = 120^\circ$ ,  
 $\angle CDE = 60^\circ$ ,  
 $\angle CED = 45^\circ$ .

### Вариант 5

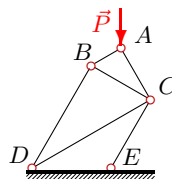
C1.



$P = 5 \text{ кН}$ ,  
 $\angle ABD = 60^\circ$ ,  
 $\angle ADB = 60^\circ$ ,  
 $\angle BDC = 30^\circ$ ,  
 $\angle BCD = 120^\circ$ ,  
 $\angle CDE = 60^\circ$ ,  
 $\angle CED = 45^\circ$ .

### Вариант 6

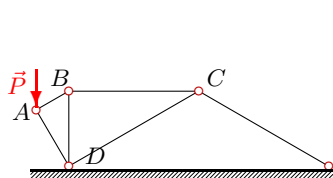
C1.



$P = 6 \text{ кН}$ ,  
 $\angle ACB = 30^\circ$ ,  
 $\angle ABC = 60^\circ$ ,  
 $\angle BDC = 30^\circ$ ,  
 $\angle BCD = 60^\circ$ ,  
 $\angle CDE = 30^\circ$ ,  
 $\angle CED = 120^\circ$ .

### Вариант 7

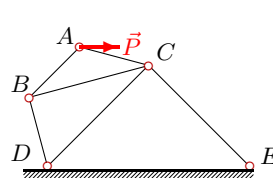
C1.



$P = 7 \text{ кН}$ ,  
 $\angle ABD = 60^\circ$ ,  
 $\angle ADB = 30^\circ$ ,  
 $\angle BDC = 60^\circ$ ,  
 $\angle BCD = 30^\circ$ ,  
 $\angle CDE = 30^\circ$ ,  
 $\angle CED = 30^\circ$ .

### Вариант 8

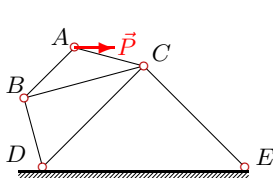
C1.



$P = 8 \text{ кН}$ ,  
 $\angle ACB = 30^\circ$ ,  
 $\angle ABC = 30^\circ$ ,  
 $\angle BDC = 60^\circ$ ,  
 $\angle BCD = 30^\circ$ ,  
 $\angle CDE = 45^\circ$ ,  
 $\angle CED = 45^\circ$ .

### Вариант 9

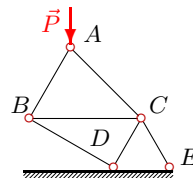
C1.



$P = 9 \text{ кН}$ ,  
 $\angle ACB = 30^\circ$ ,  
 $\angle ABC = 30^\circ$ ,  
 $\angle BDC = 60^\circ$ ,  
 $\angle BCD = 30^\circ$ ,  
 $\angle CDE = 45^\circ$ ,  
 $\angle CED = 45^\circ$ .

### Вариант 10

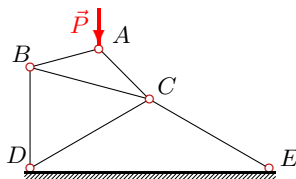
C1.



$P = 10 \text{ кН}$ ,  
 $\angle ACB = 45^\circ$ ,  
 $\angle ABC = 60^\circ$ ,  
 $\angle BDC = 90^\circ$ ,  
 $\angle BCD = 60^\circ$ ,  
 $\angle CDE = 60^\circ$ ,  
 $\angle CED = 60^\circ$ .

### Вариант 11

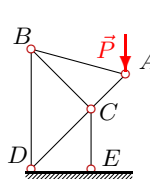
C1.



$P = 11 \text{ кН}$ ,  
 $\angle ACB = 30^\circ$ ,  
 $\angle ABC = 30^\circ$ ,  
 $\angle BDC = 60^\circ$ ,  
 $\angle BCD = 45^\circ$ ,  
 $\angle CDE = 30^\circ$ ,  
 $\angle CED = 30^\circ$ .

### Вариант 12

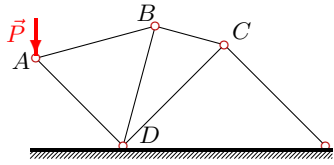
C1.



$P = 12 \text{ кН}$ ,  
 $\angle ACB = 90^\circ$ ,  
 $\angle ABC = 30^\circ$ ,  
 $\angle BDC = 45^\circ$ ,  
 $\angle BCD = 90^\circ$ ,  
 $\angle CDE = 45^\circ$ ,  
 $\angle CED = 90^\circ$ .

**Вариант 13**

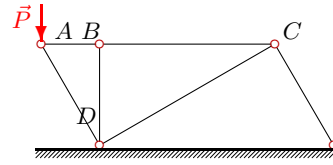
C1.



$P = 13 \text{ кН}$ ,  
 $\angle ABD = 60^\circ$ ,  
 $\angle ADB = 60^\circ$ ,  
 $\angle BDC = 30^\circ$ ,  
 $\angle BCD = 60^\circ$ ,  
 $\angle CDE = 45^\circ$ ,  
 $\angle CED = 45^\circ$ .

**Вариант 14**

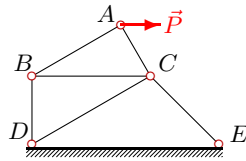
C1.



$P = 14 \text{ кН}$ ,  
 $\angle ABD = 90^\circ$ ,  
 $\angle ADB = 30^\circ$ ,  
 $\angle BDC = 60^\circ$ ,  
 $\angle BCD = 30^\circ$ ,  
 $\angle CDE = 30^\circ$ ,  
 $\angle CED = 60^\circ$ .

**Вариант 15**

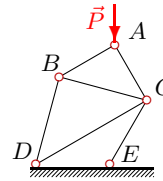
C1.



$P = 15 \text{ кН}$ ,  
 $\angle ACB = 60^\circ$ ,  
 $\angle ABC = 30^\circ$ ,  
 $\angle BDC = 60^\circ$ ,  
 $\angle BCD = 30^\circ$ ,  
 $\angle CDE = 30^\circ$ ,  
 $\angle CED = 45^\circ$ .

**Вариант 16**

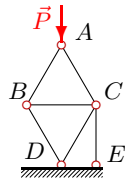
C1.



$P = 16 \text{ кН}$ ,  
 $\angle ACB = 45^\circ$ ,  
 $\angle ABC = 45^\circ$ ,  
 $\angle BDC = 45^\circ$ ,  
 $\angle BCD = 45^\circ$ ,  
 $\angle CDE = 30^\circ$ ,  
 $\angle CED = 120^\circ$ .

**Вариант 17**

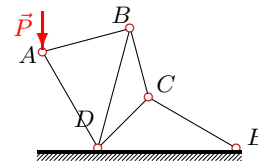
C1.



$P = 17 \text{ кН}$ ,  
 $\angle ACB = 60^\circ$ ,  
 $\angle ABC = 60^\circ$ ,  
 $\angle BDC = 60^\circ$ ,  
 $\angle BCD = 60^\circ$ ,  
 $\angle CDE = 60^\circ$ ,  
 $\angle CED = 90^\circ$ .

**Вариант 18**

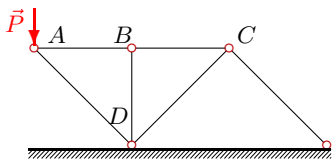
C1.



$P = 18 \text{ кН}$ ,  
 $\angle ABD = 60^\circ$ ,  
 $\angle ADB = 45^\circ$ ,  
 $\angle BDC = 30^\circ$ ,  
 $\angle BCD = 120^\circ$ ,  
 $\angle CDE = 45^\circ$ ,  
 $\angle CED = 30^\circ$ .

**Вариант 19**

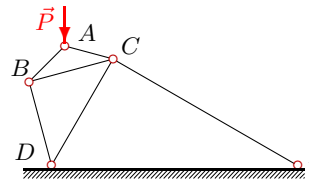
C1.



$P = 19 \text{ кН}$ ,  
 $\angle ABD = 90^\circ$ ,  
 $\angle ADB = 45^\circ$ ,  
 $\angle BDC = 45^\circ$ ,  
 $\angle BCD = 45^\circ$ ,  
 $\angle CDE = 45^\circ$ ,  
 $\angle CED = 45^\circ$ .

**Вариант 20**

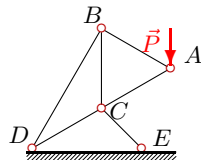
C1.



$P = 20 \text{ кН}$ ,  
 $\angle ACB = 30^\circ$ ,  
 $\angle ABC = 30^\circ$ ,  
 $\angle BDC = 45^\circ$ ,  
 $\angle BCD = 45^\circ$ ,  
 $\angle CDE = 60^\circ$ ,  
 $\angle CED = 30^\circ$ .

**Вариант 21**

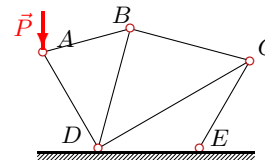
C1.



$P = 21 \text{ кН}$ ,  
 $\angle ACB = 60^\circ$ ,  
 $\angle ABC = 60^\circ$ ,  
 $\angle BDC = 30^\circ$ ,  
 $\angle BCD = 120^\circ$ ,  
 $\angle CDE = 30^\circ$ ,  
 $\angle CED = 45^\circ$ .

**Вариант 22**

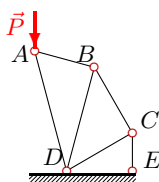
C1.



$P = 22 \text{ кН}$ ,  
 $\angle ABD = 60^\circ$ ,  
 $\angle ADB = 45^\circ$ ,  
 $\angle BDC = 45^\circ$ ,  
 $\angle BCD = 45^\circ$ ,  
 $\angle CDE = 30^\circ$ ,  
 $\angle CED = 120^\circ$ .

**Вариант 23**

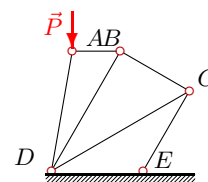
C1.



$P = 23 \text{ кН}$ ,  
 $\angle ABD = 90^\circ$ ,  
 $\angle ADB = 30^\circ$ ,  
 $\angle BDC = 45^\circ$ ,  
 $\angle BCD = 90^\circ$ ,  
 $\angle CDE = 30^\circ$ ,  
 $\angle CED = 90^\circ$ .

**Вариант 24**

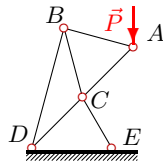
C1.



$P = 24 \text{ кН}$ ,  
 $\angle ABD = 60^\circ$ ,  
 $\angle ADB = 20^\circ$ ,  
 $\angle BDC = 30^\circ$ ,  
 $\angle BCD = 60^\circ$ ,  
 $\angle CDE = 30^\circ$ ,  
 $\angle CED = 120^\circ$ .

**Вариант 25**

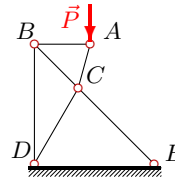
C1.



$$\begin{aligned}
 P &= 25 \text{ кН}, \\
 \angle ACB &= 60^\circ, \\
 \angle ABC &= 60^\circ, \\
 \angle BDC &= 30^\circ, \\
 \angle BCD &= 120^\circ, \\
 \angle CDE &= 45^\circ, \\
 \angle CED &= 60^\circ.
 \end{aligned}$$

**Вариант 26**

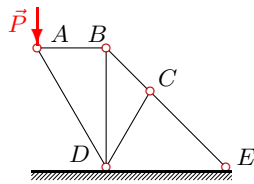
C1.



$$\begin{aligned}
 P &= 26 \text{ кН}, \\
 \angle ACB &= 60^\circ, \\
 \angle ABC &= 45^\circ, \\
 \angle BDC &= 30^\circ, \\
 \angle BCD &= 105^\circ, \\
 \angle CDE &= 60^\circ, \\
 \angle CED &= 45^\circ.
 \end{aligned}$$

**Вариант 27**

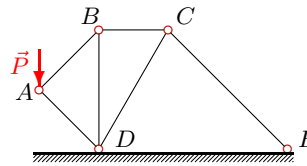
C1.



$$\begin{aligned}
 P &= 27 \text{ кН}, \\
 \angle ABD &= 90^\circ, \\
 \angle ADB &= 30^\circ, \\
 \angle BDC &= 30^\circ, \\
 \angle BCD &= 105^\circ, \\
 \angle CDE &= 60^\circ, \\
 \angle CED &= 45^\circ.
 \end{aligned}$$

**Вариант 28**

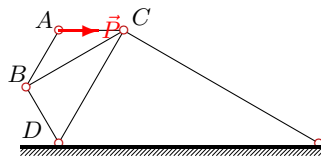
C1.



$$\begin{aligned}
 P &= 28 \text{ кН}, \\
 \angle ABD &= 45^\circ, \\
 \angle ADB &= 45^\circ, \\
 \angle BDC &= 30^\circ, \\
 \angle BCD &= 60^\circ, \\
 \angle CDE &= 60^\circ, \\
 \angle CED &= 45^\circ.
 \end{aligned}$$

**Вариант 29**

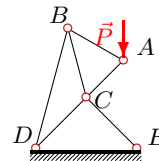
C1.



$$\begin{aligned}
 P &= 29 \text{ кН}, \\
 \angle ACB &= 30^\circ, \\
 \angle ABC &= 30^\circ, \\
 \angle BDC &= 60^\circ, \\
 \angle BCD &= 30^\circ, \\
 \angle CDE &= 60^\circ, \\
 \angle CED &= 30^\circ.
 \end{aligned}$$

**Вариант 30**

C1.



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

Отвѣты

	$S_{AB}$	$S_{AC}$	$S_{AD}$	$S_{BC}$	$S_{BD}$	$S_{CD}$	$S_{CE}$
1	-0.866	-0.500	—	1.183	-1.061	-1.061	0.500
2	1.000	—	-1.732	0.866	-0.500	-0.433	0.750
3	1.732	-3.464	—	-3.464	3.000	-5.196	-3.000
4	2.000	-3.464	—	-3.464	2.000	-4.392	-3.106
5	5.000	—	-5.000	8.660	-10.000	2.321	7.765
6	-3.000	-5.196	—	1.500	-2.598	6.000	-7.794
7	3.500	—	-6.062	3.031	-1.750	-1.750	1.750
8	2.391	-6.532	—	-2.071	1.195	5.059	-6.692
9	2.690	-7.348	—	-2.329	1.345	5.692	-7.529
10	-7.321	-5.176	—	14.641	-12.679	-13.094	8.868
11	-8.981	-12.269	—	8.981	-4.649	-6.351	-6.351
12	9.798	-13.384	—	-13.384	6.928	0.000	-18.928
13	10.614	—	-14.500	9.192	-5.307	-4.596	7.961
14	8.083	—	-16.166	8.083	0.000	-7.000	4.041
15	12.990	-7.500	—	-11.250	6.495	6.226	-13.588
16	-8.000	-13.856	—	5.657	-5.657	13.072	-19.713
17	-9.815	-9.815	—	9.815	-9.815	-9.815	0.000
18	9.317	—	-18.000	16.138	-18.635	11.814	14.469
19	19.000	—	-26.870	19.000	0.000	-13.435	13.435
20	-22.307	-16.330	—	19.319	-11.154	-9.434	-2.113
21	21.000	-21.000	—	-42.000	36.373	-51.746	-37.656
22	11.388	—	-22.000	9.862	-5.694	-19.053	13.947
23	6.874	—	-25.653	9.721	-6.874	-5.612	11.225
24	-4.232	—	-24.370	-3.665	2.116	7.330	-6.348
25	20.412	-27.884	—	-40.825	35.355	-38.823	-36.603
26	6.967	-26.917	—	-9.852	6.967	-24.133	-17.065
27	15.588	—	-31.177	22.045	-15.588	-0.000	22.045
28	19.799	—	-19.799	14.000	-14.000	-10.249	12.552
29	0.000	-29.000	—	0.000	0.000	14.500	-25.115
30	21.962	-26.897	—	-42.426	31.058	-48.110	-36.742