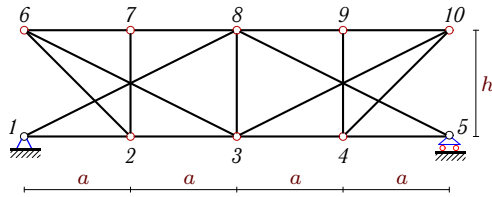


# Линии влияния усилий в стержнях фермы

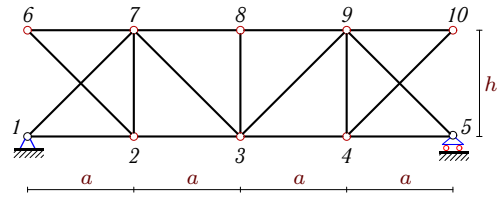
Найти максимальное и минимальное усилие в указанных стержнях фермы от действия постоянной  $q_p$  и временной  $q_{vr}$  нагрузки, равномерно распределенной по нижнему или верхнему поясу. Дано:  $a = 1$  м,  $h = 1$  м.

## Задача 25.1.



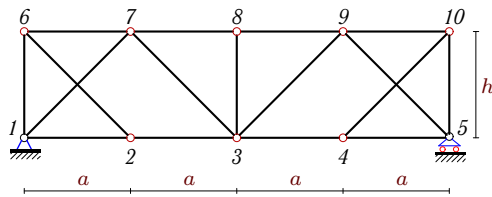
$q_{vr} = 14$  кН/м,  $q_p = 7$  кН/м.  
Груз понизу:  $S_{1-2}$ ,  $S_{7-8}$ .

## Задача 25.2.



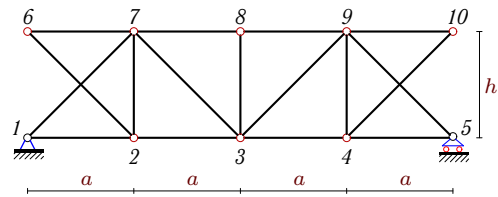
$q_{vr} = 16$  кН/м,  $q_p = 5$  кН/м.  
Груз понизу:  $S_{3-7}$ ,  $S_{7-8}$ .

## Задача 25.3.



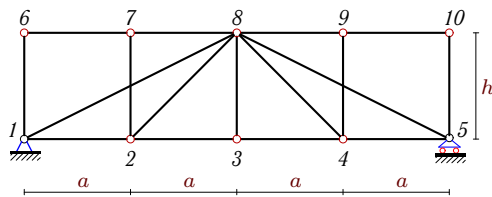
$q_{vr} = 13$  кН/м,  $q_p = 3$  кН/м.  
Груз понизу:  $S_{1-2}$ ,  $S_{8-9}$ .

## Задача 25.4.



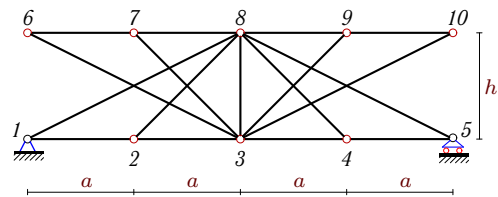
$q_{vr} = 19$  кН/м,  $q_p = 3$  кН/м.  
Груз понизу:  $S_{3-7}$ ,  $S_{1-7}$ .

## Задача 25.5.



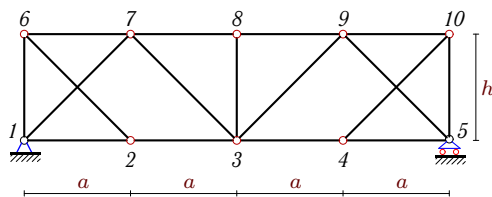
$q_{vr} = 14$  кН/м,  $q_p = 5$  кН/м.  
Груз понизу:  $S_{1-2}$ ,  $S_{3-8}$ .

## Задача 25.6.



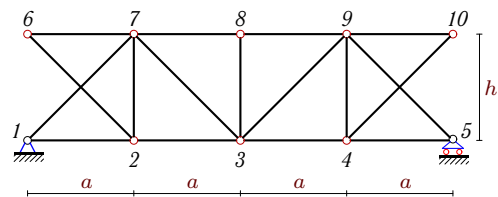
$q_{vr} = 17$  кН/м,  $q_p = 5$  кН/м.  
Груз поверху:  $S_{1-2}$ ,  $S_{4-5}$ .

## Задача 25.7.



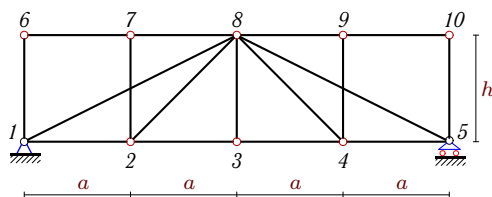
$q_{vr} = 18$  кН/м,  $q_p = 7$  кН/м.  
Груз понизу:  $S_{1-2}$ ,  $S_{6-7}$ .

## Задача 25.8.



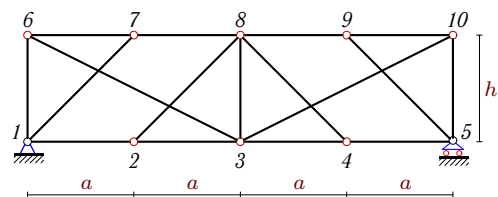
$q_{vr} = 18$  кН/м,  $q_p = 5$  кН/м.  
Груз поверху:  $S_{3-7}$ ,  $S_{4-5}$ .

## Задача 25.9.



$q_{vr} = 19$  кН/м,  $q_p = 5$  кН/м.  
Груз понизу:  $S_{1-2}$ ,  $S_{3-8}$ .

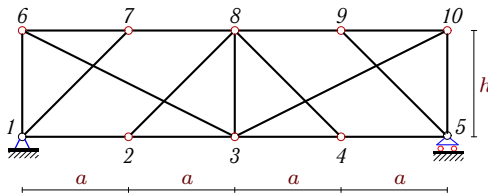
## Задача 25.10.



$q_{vr} = 15$  кН/м,  $q_p = 4$  кН/м.  
Груз понизу:  $S_{2-3}$ ,  $S_{6-7}$ .

**Задача 25.11.**

2

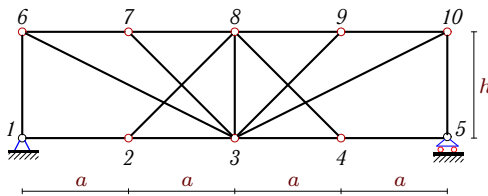


$$q_{vr} = 13 \text{ кН/м}, q_p = 5 \text{ кН/м}.$$

Груз сверху:  $S_{6-7}, S_{7-8}$ .

**Задача 25.13.**

2

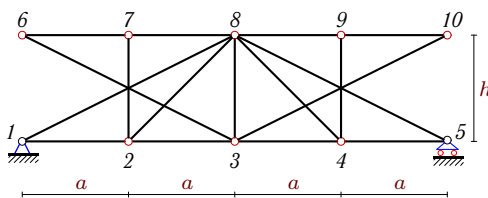


$$q_{vr} = 13 \text{ кН/м}, q_p = 3 \text{ кН/м}.$$

Груз понизу:  $S_{2-3}, S_{6-7}$ .

**Задача 25.15.**

2

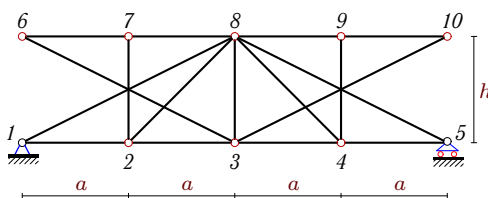


$$q_{vr} = 14 \text{ кН/м}, q_p = 3 \text{ кН/м}.$$

Груз сверху:  $S_{1-2}, S_{4-5}$ .

**Задача 25.17.**

2

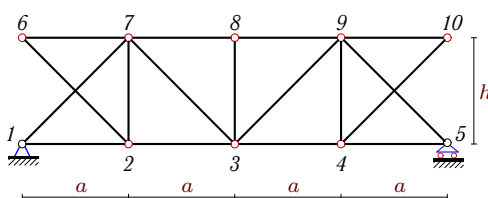


$$q_{vr} = 13 \text{ кН/м}, q_p = 6 \text{ кН/м}.$$

Груз понизу:  $S_{1-2}, S_{3-8}$ .

**Задача 25.19.**

2

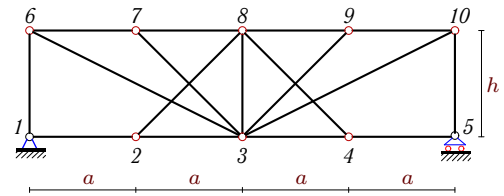


$$q_{vr} = 16 \text{ кН/м}, q_p = 6 \text{ кН/м}.$$

Груз сверху:  $S_{3-7}, S_{7-8}$ .

**Задача 25.12.**

2

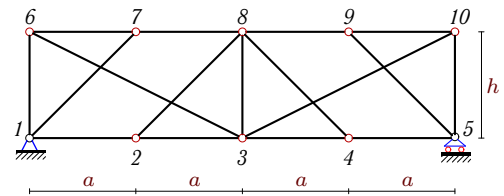


$$q_{vr} = 15 \text{ кН/м}, q_p = 4 \text{ кН/м}.$$

Груз понизу:  $S_{2-3}, S_{8-9}$ .

**Задача 25.14.**

2

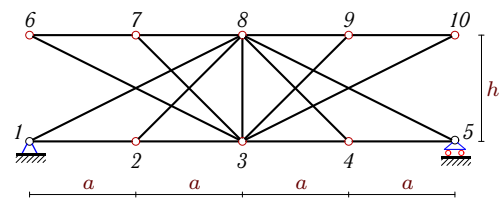


$$q_{vr} = 13 \text{ кН/м}, q_p = 6 \text{ кН/м}.$$

Груз сверху:  $S_{6-7}, S_{4-5}$ .

**Задача 25.16.**

2

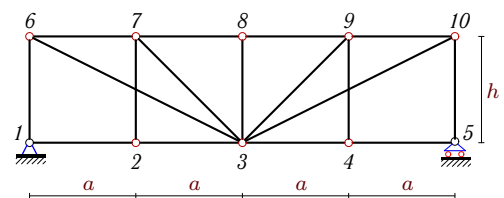


$$q_{vr} = 14 \text{ кН/м}, q_p = 3 \text{ кН/м}.$$

Груз понизу:  $S_{1-2}, S_{3-8}$ .

**Задача 25.18.**

2

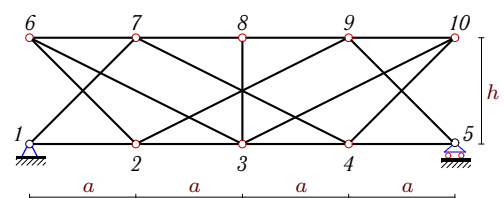


$$q_{vr} = 15 \text{ кН/м}, q_p = 5 \text{ кН/м}.$$

Груз понизу:  $S_{6-7}, S_{9-10}$ .

**Задача 25.20.**

2

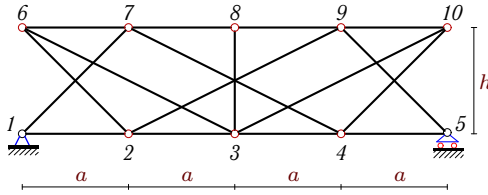


$$q_{vr} = 17 \text{ кН/м}, q_p = 7 \text{ кН/м}.$$

Груз понизу:  $S_{2-3}, S_{4-5}$ .

**Задача 25.21.**

2

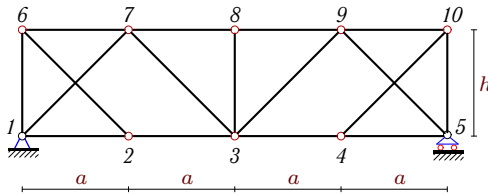


$$q_{vr} = 13 \text{ кН/м}, q_p = 5 \text{ кН/м}.$$

Груз понизу:  $S_{2-3}, S_{4-5}$ .

**Задача 25.23.**

2

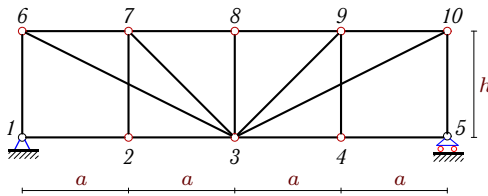


$$q_{vr} = 17 \text{ кН/м}, q_p = 4 \text{ кН/м}.$$

Груз понизу:  $S_{1-2}, S_{8-9}$ .

**Задача 25.25.**

2

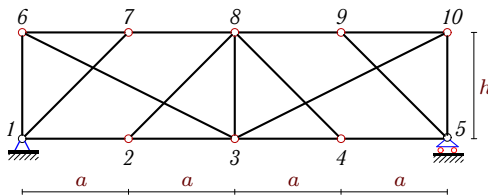


$$q_{vr} = 15 \text{ кН/м}, q_p = 6 \text{ кН/м}.$$

Груз понизу:  $S_{6-7}, S_{7-8}$ .

**Задача 25.27.**

2

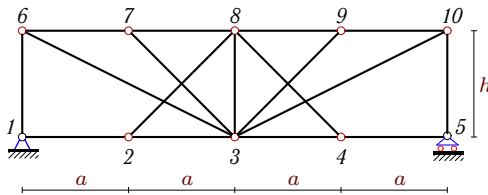


$$q_{vr} = 18 \text{ кН/м}, q_p = 4 \text{ кН/м}.$$

Груз понизу:  $S_{2-3}, S_{6-7}$ .

**Задача 25.29.**

2

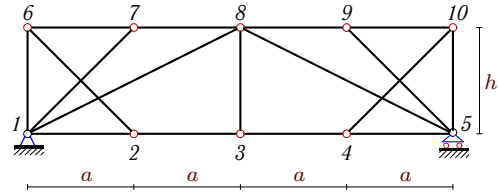


$$q_{vr} = 15 \text{ кН/м}, q_p = 3 \text{ кН/м}.$$

Груз поверху:  $S_{6-7}, S_{8-9}$ .

**Задача 25.22.**

2

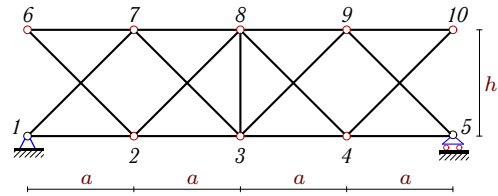


$$q_{vr} = 18 \text{ кН/м}, q_p = 7 \text{ кН/м}.$$

Груз поверху:  $S_{1-8}, S_{1-6}$ .

**Задача 25.24.**

2

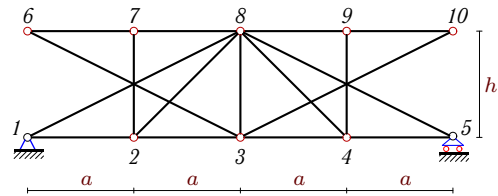


$$q_{vr} = 18 \text{ кН/м}, q_p = 4 \text{ кН/м}.$$

Груз поверху:  $S_{2-3}, S_{7-8}$ .

**Задача 25.26.**

2

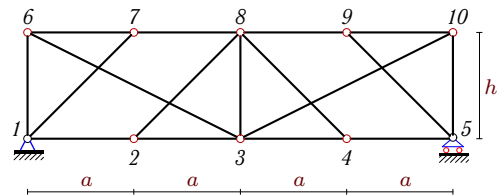


$$q_{vr} = 18 \text{ кН/м}, q_p = 5 \text{ кН/м}.$$

Груз понизу:  $S_{1-2}, S_{3-8}$ .

**Задача 25.28.**

2

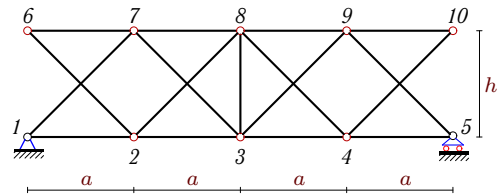


$$q_{vr} = 18 \text{ кН/м}, q_p = 5 \text{ кН/м}.$$

Груз понизу:  $S_{2-3}, S_{6-7}$ .

**Задача 25.30.**

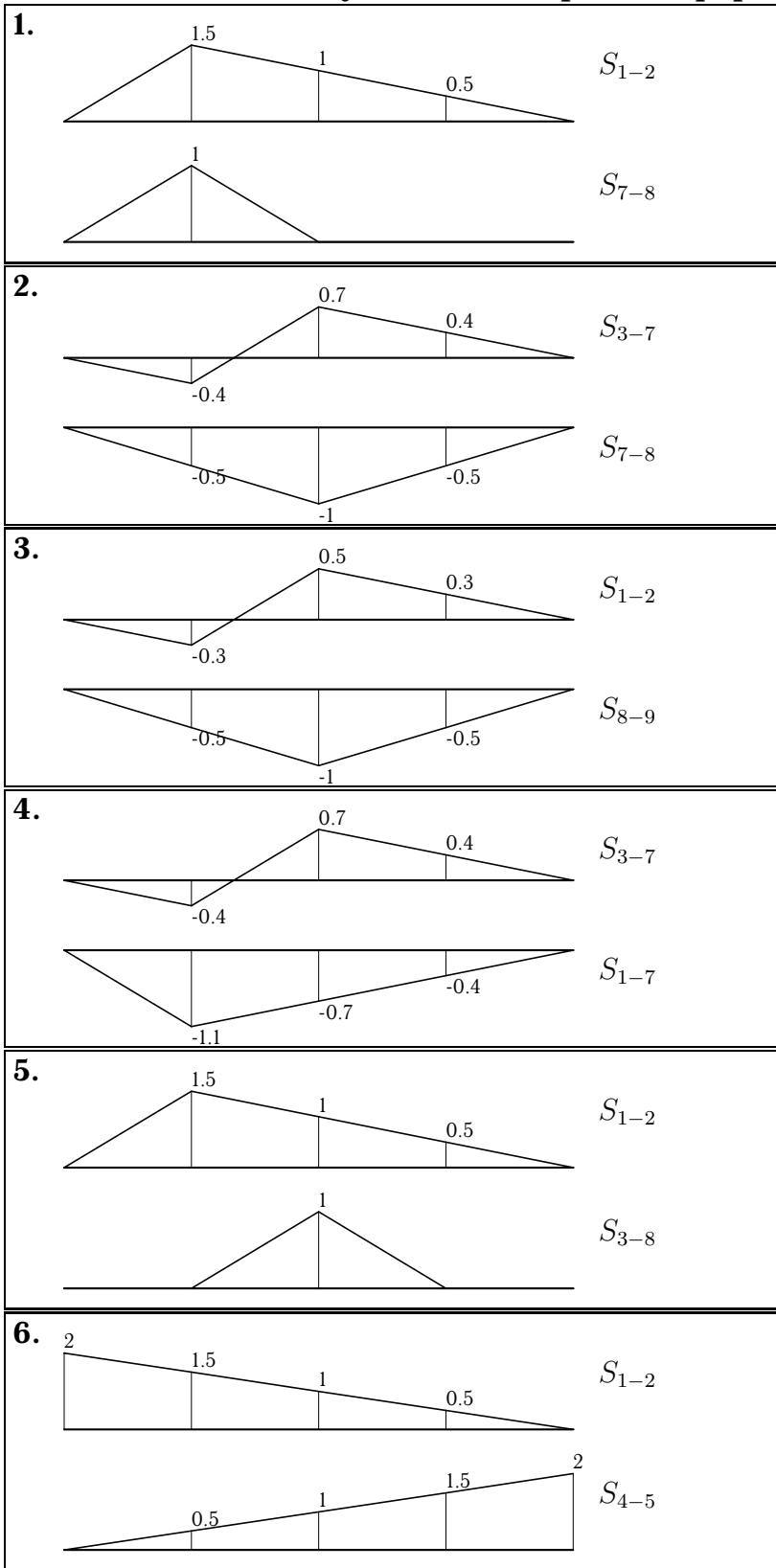
2

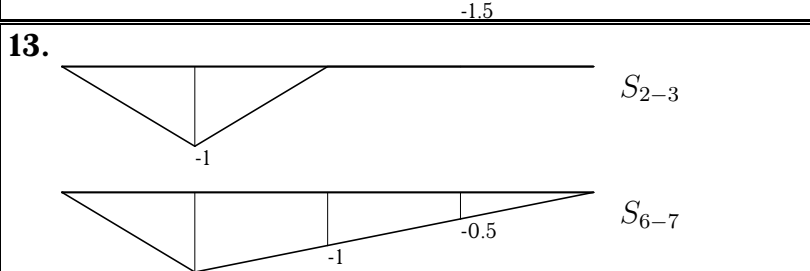
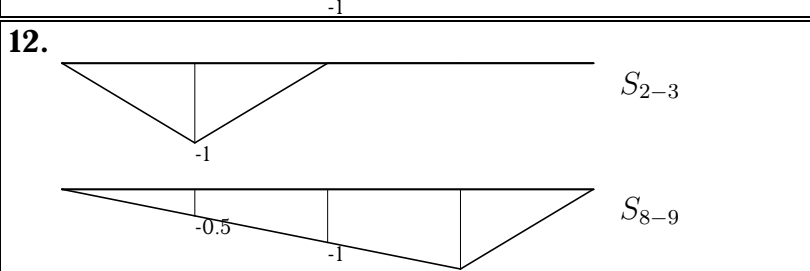
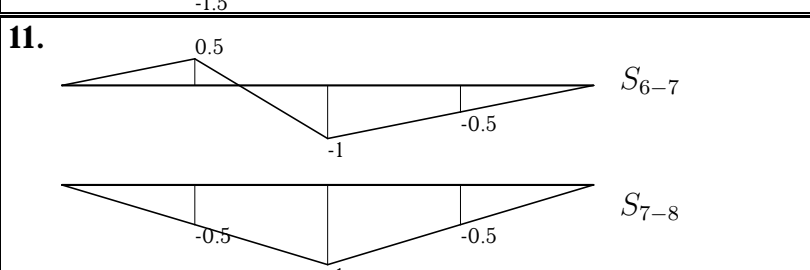
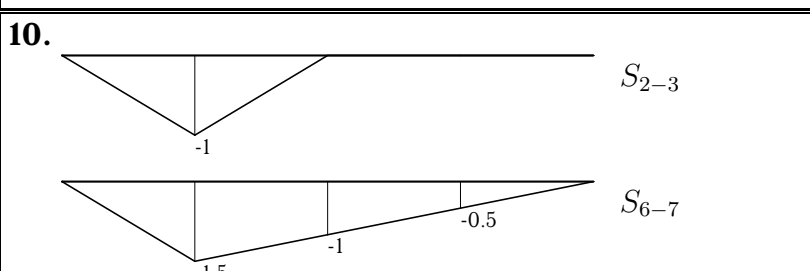
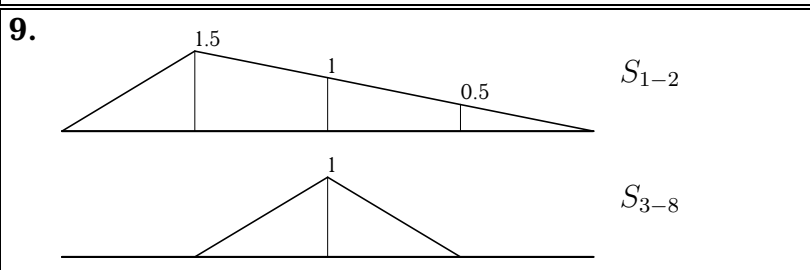
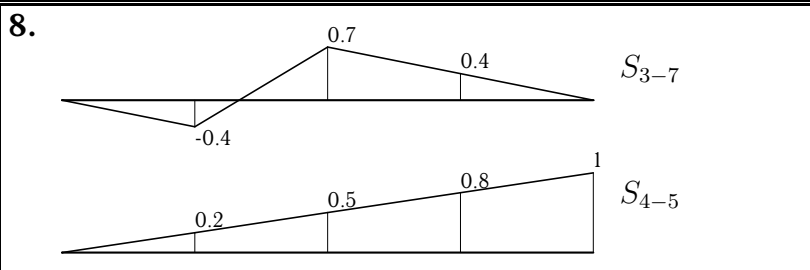
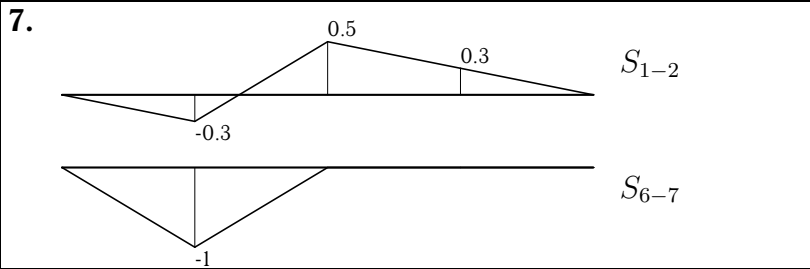


$$q_{vr} = 16 \text{ кН/м}, q_p = 3 \text{ кН/м}.$$

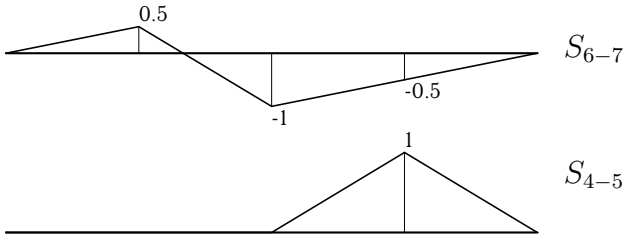
Груз поверху:  $S_{2-3}, S_{6-7}$ .

**Линии влияния усилий в стержнях фермы**

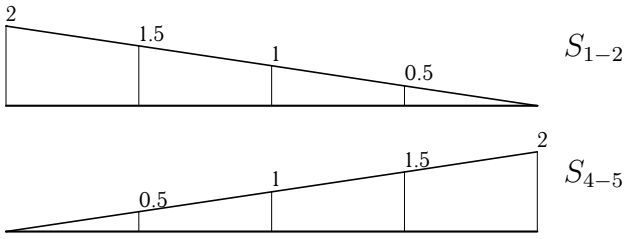




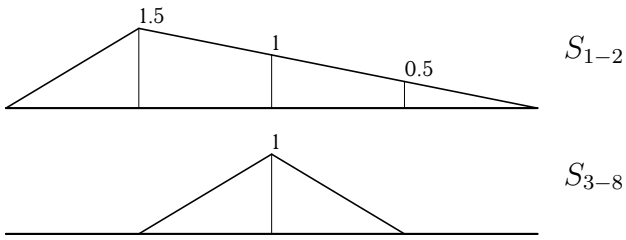
14.



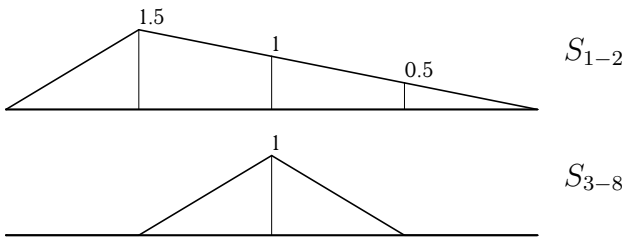
15.



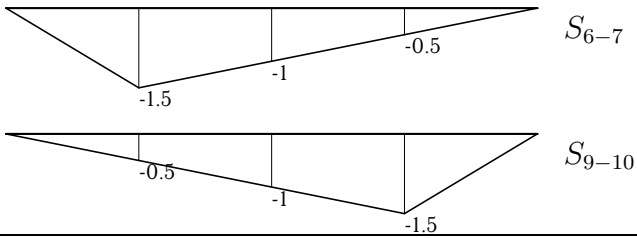
16.



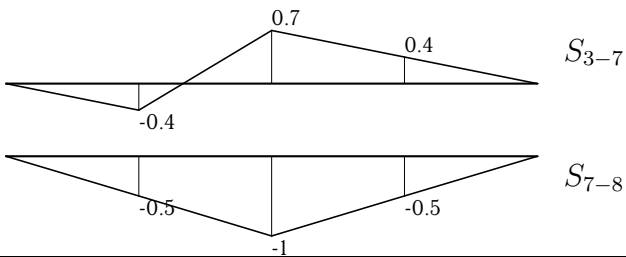
17.



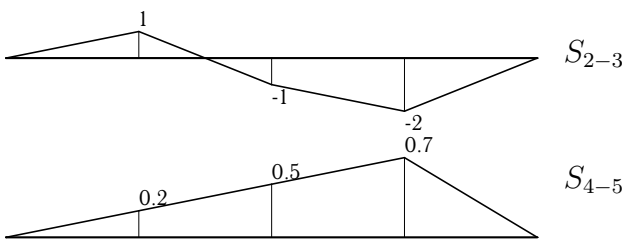
18.

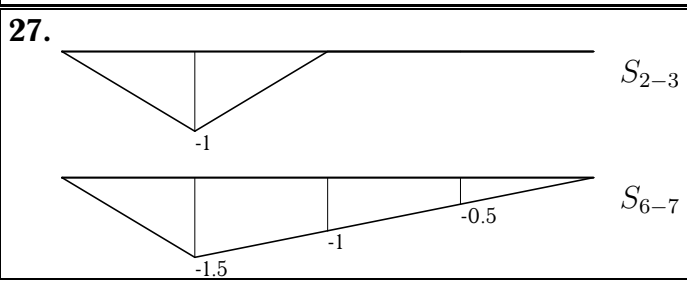
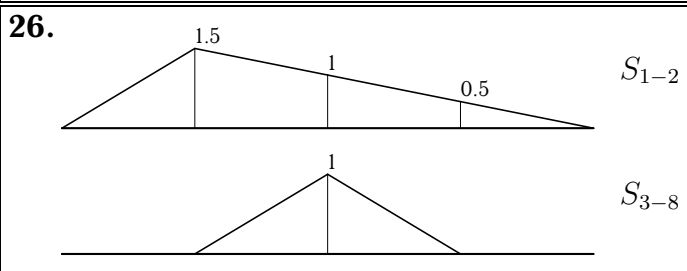
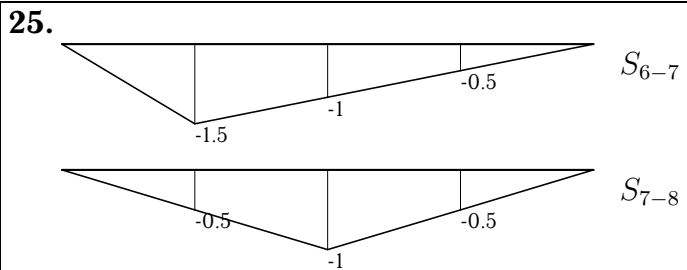
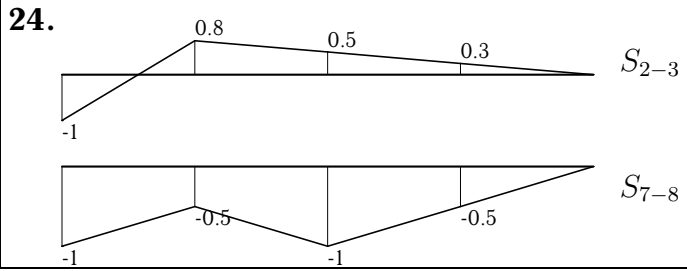
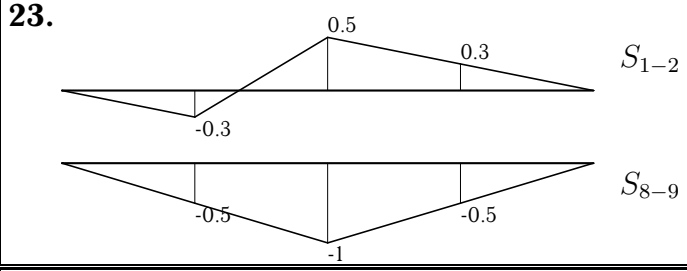
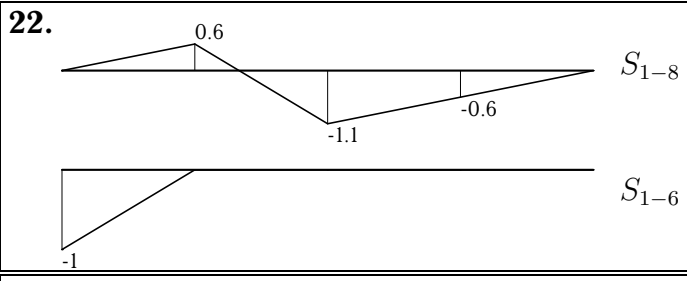
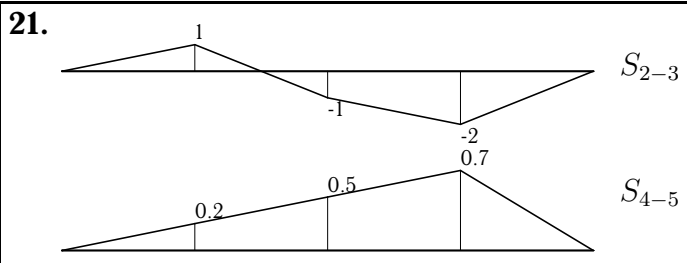


19.

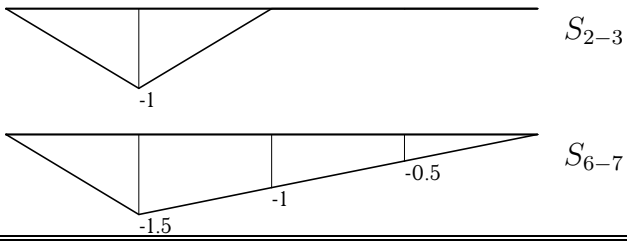


20.

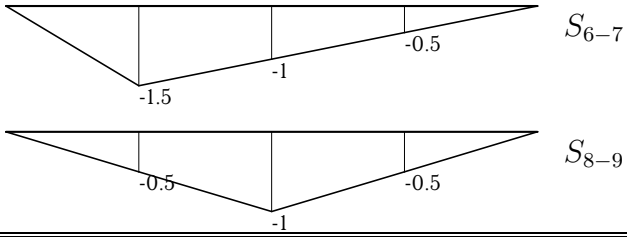




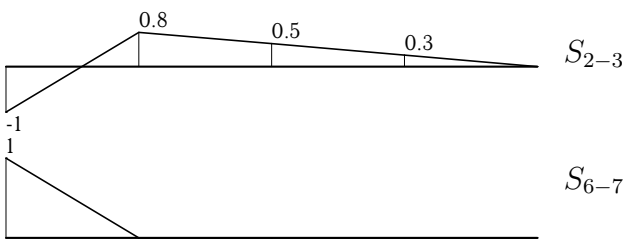
28.



29.



30.





№		$S_p$	$S_{min}$	$S_{max}$		$S_p$	$S_{min}$	$S_{max}$
1	$S_{1-2}$	21.000	21.000	63.000	$S_{7-8}$	7.000	7.000	21.000
2	$S_{3-7}$	3.536	-0.236	18.620	$S_{7-8}$	-10.000	-42.000	-10.000
3	$S_{1-2}$	1.500	-0.667	10.167	$S_{8-9}$	-6.000	-32.000	-6.000
4	$S_{3-7}$	2.121	-2.357	20.035	$S_{1-7}$	-6.364	-46.669	-6.364
5	$S_{1-2}$	15.000	15.000	57.000	$S_{3-8}$	5.000	5.000	19.000
6	$S_{1-2}$	20.000	20.000	88.000	$S_{4-5}$	20.000	20.000	88.000
7	$S_{1-2}$	3.500	0.500	15.500	$S_{6-7}$	-7.000	-25.000	-7.000
8	$S_{3-7}$	3.536	-0.707	20.506	$S_{4-5}$	10.000	10.000	46.000
9	$S_{1-2}$	15.000	15.000	72.000	$S_{3-8}$	5.000	5.000	24.000
10	$S_{2-3}$	-4.000	-19.000	-4.000	$S_{6-7}$	-12.000	-57.000	-12.000
11	$S_{6-7}$	-5.000	-22.333	-0.667	$S_{7-8}$	-10.000	-36.000	-10.000
12	$S_{2-3}$	-4.000	-19.000	-4.000	$S_{8-9}$	-12.000	-57.000	-12.000
13	$S_{2-3}$	-3.000	-16.000	-3.000	$S_{6-7}$	-9.000	-48.000	-9.000
14	$S_{6-7}$	-6.000	-23.333	-1.667	$S_{4-5}$	6.000	6.000	19.000
15	$S_{1-2}$	12.000	12.000	68.000	$S_{4-5}$	12.000	12.000	68.000
16	$S_{1-2}$	9.000	9.000	51.000	$S_{3-8}$	3.000	3.000	17.000
17	$S_{1-2}$	18.000	18.000	57.000	$S_{3-8}$	6.000	6.000	19.000
18	$S_{6-7}$	-15.000	-60.000	-15.000	$S_{9-10}$	-15.000	-60.000	-15.000
19	$S_{3-7}$	4.243	0.471	19.328	$S_{7-8}$	-12.000	-44.000	-12.000
20	$S_{2-3}$	-14.000	-60.750	-1.250	$S_{4-5}$	10.500	10.500	36.000
21	$S_{2-3}$	-10.000	-45.750	-0.250	$S_{4-5}$	7.500	7.500	27.000
22	$S_{1-8}$	-7.826	-34.659	-1.118	$S_{1-6}$	-3.500	-12.500	-3.500
23	$S_{1-2}$	2.000	-0.833	13.333	$S_{8-9}$	-8.000	-42.000	-8.000
24	$S_{2-3}$	4.000	-1.143	27.143	$S_{7-8}$	-10.000	-55.000	-10.000
25	$S_{6-7}$	-18.000	-63.000	-18.000	$S_{7-8}$	-12.000	-42.000	-12.000
26	$S_{1-2}$	15.000	15.000	69.000	$S_{3-8}$	5.000	5.000	23.000
27	$S_{2-3}$	-4.000	-22.000	-4.000	$S_{6-7}$	-12.000	-66.000	-12.000
28	$S_{2-3}$	-5.000	-23.000	-5.000	$S_{6-7}$	-15.000	-69.000	-15.000
29	$S_{6-7}$	-9.000	-54.000	-9.000	$S_{8-9}$	-6.000	-36.000	-6.000
30	$S_{2-3}$	3.000	-1.571	23.571	$S_{6-7}$	1.500	1.500	9.500