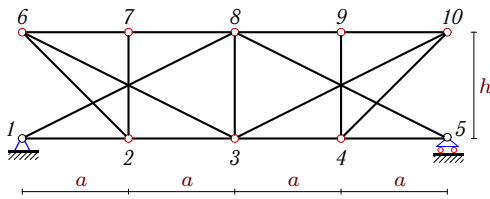


# Линии влияния усилий в стержнях фермы

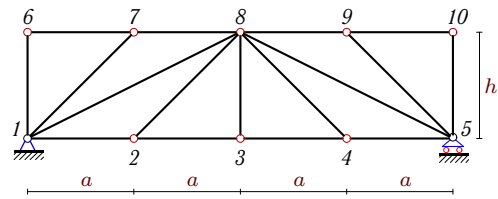
Найти максимальное и минимальное усилие в указанных стержнях фермы от действия постоянной  $q_p$  и временной  $q_{vr}$  нагрузки, равномерно распределенной по нижнему или верхнему поясу. Дано:  $a = 1$  м,  $h = 1$  м.

## Задача 25.1.



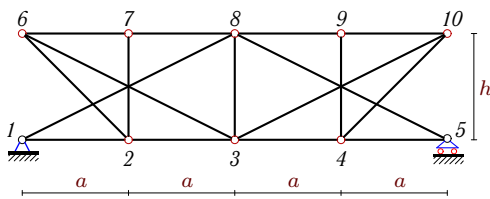
$q_{vr} = 19$  кН/м,  $q_p = 6$  кН/м.  
Груз сверху:  $S_{1-2}$ ,  $S_{6-7}$ .

## Задача 25.2.



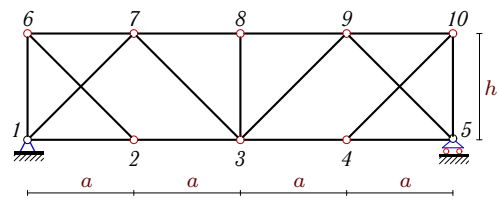
$q_{vr} = 13$  кН/м,  $q_p = 6$  кН/м.  
Груз понизу:  $S_{1-2}$ ,  $S_{3-8}$ .

## Задача 25.3.



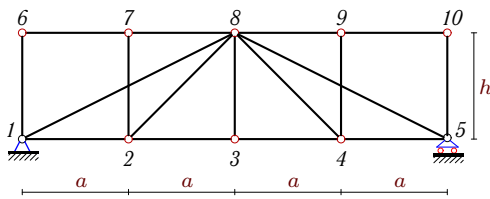
$q_{vr} = 15$  кН/м,  $q_p = 4$  кН/м.  
Груз сверху:  $S_{1-2}$ ,  $S_{8-9}$ .

## Задача 25.4.



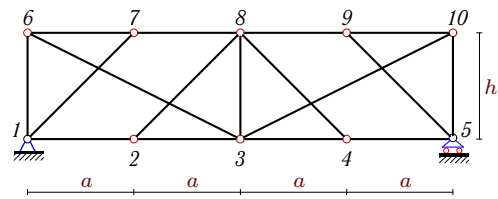
$q_{vr} = 13$  кН/м,  $q_p = 5$  кН/м.  
Груз сверху:  $S_{3-7}$ ,  $S_{3-8}$ .

## Задача 25.5.



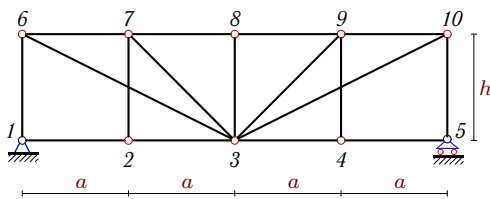
$q_{vr} = 16$  кН/м,  $q_p = 7$  кН/м.  
Груз сверху:  $S_{1-2}$ ,  $S_{1-6}$ .

## Задача 25.6.



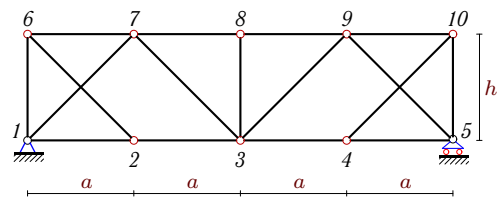
$q_{vr} = 18$  кН/м,  $q_p = 3$  кН/м.  
Груз понизу:  $S_{2-3}$ ,  $S_{8-9}$ .

## Задача 25.7.



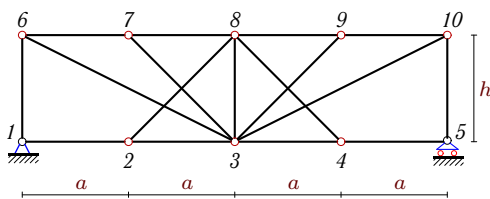
$q_{vr} = 17$  кН/м,  $q_p = 5$  кН/м.  
Груз понизу:  $S_{6-7}$ ,  $S_{7-8}$ .

## Задача 25.8.



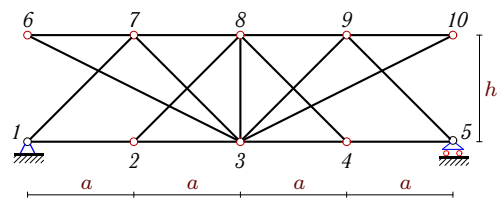
$q_{vr} = 16$  кН/м,  $q_p = 5$  кН/м.  
Груз сверху:  $S_{3-7}$ ,  $S_{8-9}$ .

## Задача 25.9.



$q_{vr} = 18$  кН/м,  $q_p = 5$  кН/м.  
Груз сверху:  $S_{6-7}$ ,  $S_{7-8}$ .

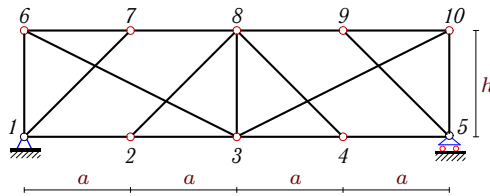
## Задача 25.10.



$q_{vr} = 19$  кН/м,  $q_p = 6$  кН/м.  
Груз сверху:  $S_{3-7}$ ,  $S_{4-5}$ .

**Задача 25.11.**

3

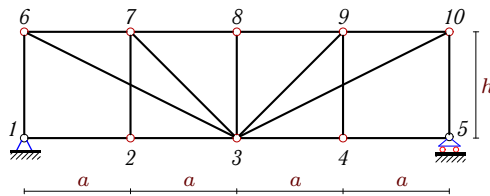


$$q_{vr} = 18 \text{ кН/м}, q_p = 3 \text{ кН/м}.$$

Груз поверху:  $S_{6-7}, S_{8-9}$ .

**Задача 25.13.**

3

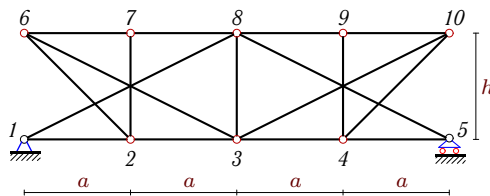


$$q_{vr} = 19 \text{ кН/м}, q_p = 3 \text{ кН/м}.$$

Груз поверху:  $S_{6-7}, S_{9-10}$ .

**Задача 25.15.**

3

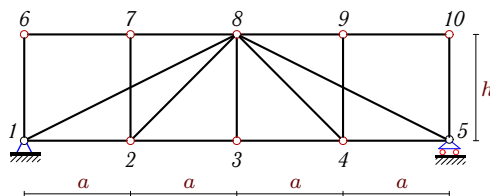


$$q_{vr} = 13 \text{ кН/м}, q_p = 6 \text{ кН/м}.$$

Груз поверху:  $S_{1-2}, S_{6-7}$ .

**Задача 25.17.**

3

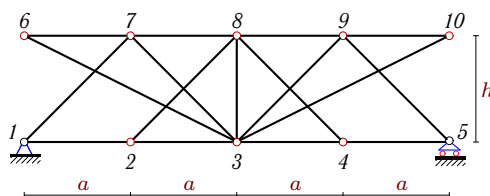


$$q_{vr} = 14 \text{ кН/м}, q_p = 4 \text{ кН/м}.$$

Груз понизу:  $S_{1-2}, S_{3-8}$ .

**Задача 25.19.**

3

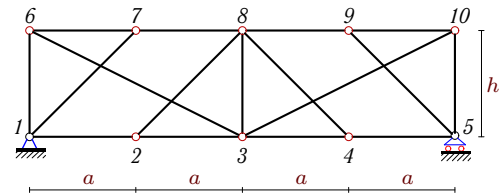


$$q_{vr} = 19 \text{ кН/м}, q_p = 4 \text{ кН/м}.$$

Груз понизу:  $S_{2-3}, S_{7-8}$ .

**Задача 25.12.**

3

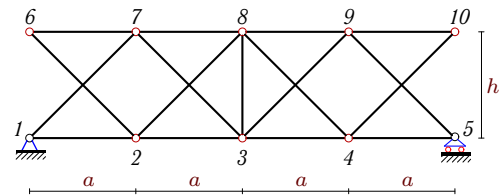


$$q_{vr} = 19 \text{ кН/м}, q_p = 4 \text{ кН/м}.$$

Груз поверху:  $S_{6-7}, S_{7-8}$ .

**Задача 25.14.**

3

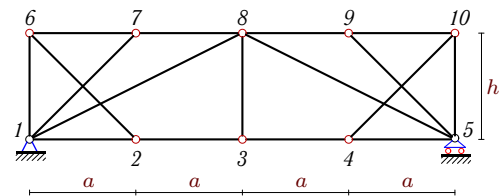


$$q_{vr} = 19 \text{ кН/м}, q_p = 3 \text{ кН/м}.$$

Груз поверху:  $S_{2-3}, S_{7-8}$ .

**Задача 25.16.**

3

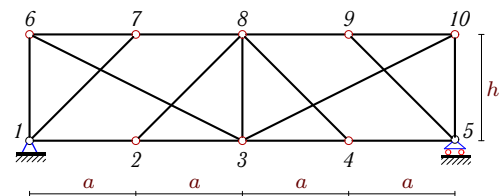


$$q_{vr} = 13 \text{ кН/м}, q_p = 5 \text{ кН/м}.$$

Груз поверху:  $S_{1-8}, S_{7-8}$ .

**Задача 25.18.**

3

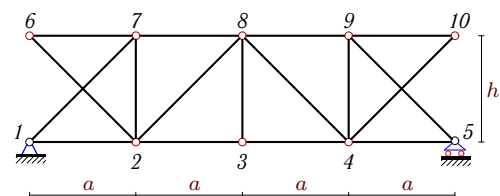


$$q_{vr} = 15 \text{ кН/м}, q_p = 5 \text{ кН/м}.$$

Груз поверху:  $S_{6-7}, S_{7-8}$ .

**Задача 25.20.**

3

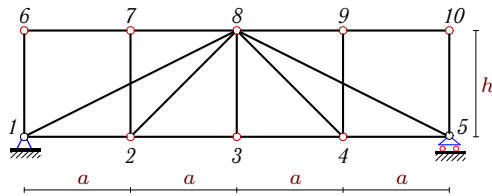


$$q_{vr} = 13 \text{ кН/м}, q_p = 5 \text{ кН/м}.$$

Груз поверху:  $S_{2-7}, S_{9-10}$ .

**Задача 25.21.**

3

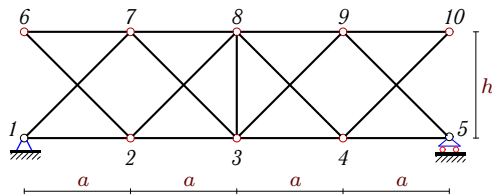


$$q_{vr} = 17 \text{ кН/м}, q_p = 4 \text{ кН/м}.$$

Груз сверху:  $S_{1-2}, S_{1-6}$ .

**Задача 25.23.**

3

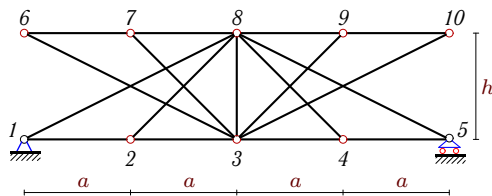


$$q_{vr} = 19 \text{ кН/м}, q_p = 6 \text{ кН/м}.$$

Груз понизу:  $S_{2-3}, S_{7-8}$ .

**Задача 25.25.**

3

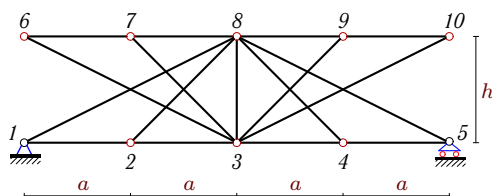


$$q_{vr} = 14 \text{ кН/м}, q_p = 5 \text{ кН/м}.$$

Груз сверху:  $S_{1-2}, S_{7-8}$ .

**Задача 25.27.**

3

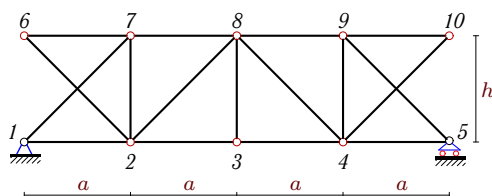


$$q_{vr} = 14 \text{ кН/м}, q_p = 7 \text{ кН/м}.$$

Груз понизу:  $S_{1-2}, S_{3-8}$ .

**Задача 25.29.**

3

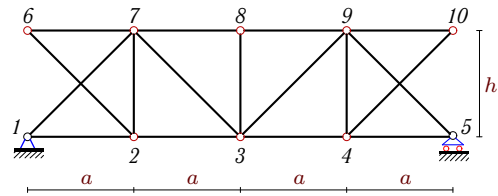


$$q_{vr} = 18 \text{ кН/м}, q_p = 3 \text{ кН/м}.$$

Груз понизу:  $S_{2-8}, S_{7-8}$ .

**Задача 25.22.**

3

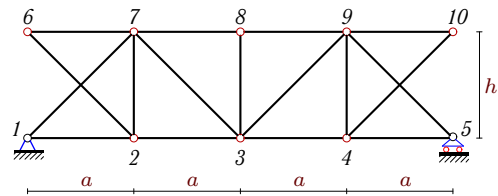


$$q_{vr} = 14 \text{ кН/м}, q_p = 7 \text{ кН/м}.$$

Груз понизу:  $S_{3-7}, S_{7-8}$ .

**Задача 25.24.**

3

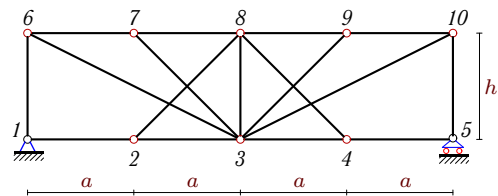


$$q_{vr} = 19 \text{ кН/м}, q_p = 6 \text{ кН/м}.$$

Груз сверху:  $S_{3-7}, S_{6-7}$ .

**Задача 25.26.**

3

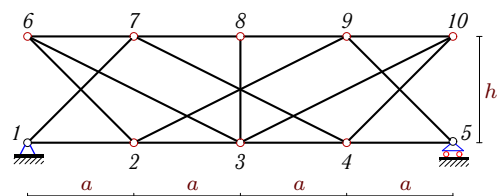


$$q_{vr} = 17 \text{ кН/м}, q_p = 7 \text{ кН/м}.$$

Груз сверху:  $S_{6-7}, S_{7-8}$ .

**Задача 25.28.**

3

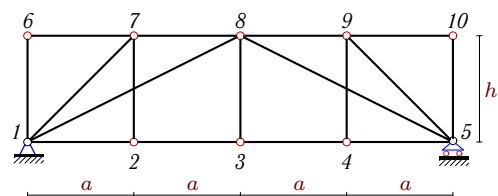


$$q_{vr} = 16 \text{ кН/м}, q_p = 7 \text{ кН/м}.$$

Груз сверху:  $S_{2-3}, S_{4-5}$ .

**Задача 25.30.**

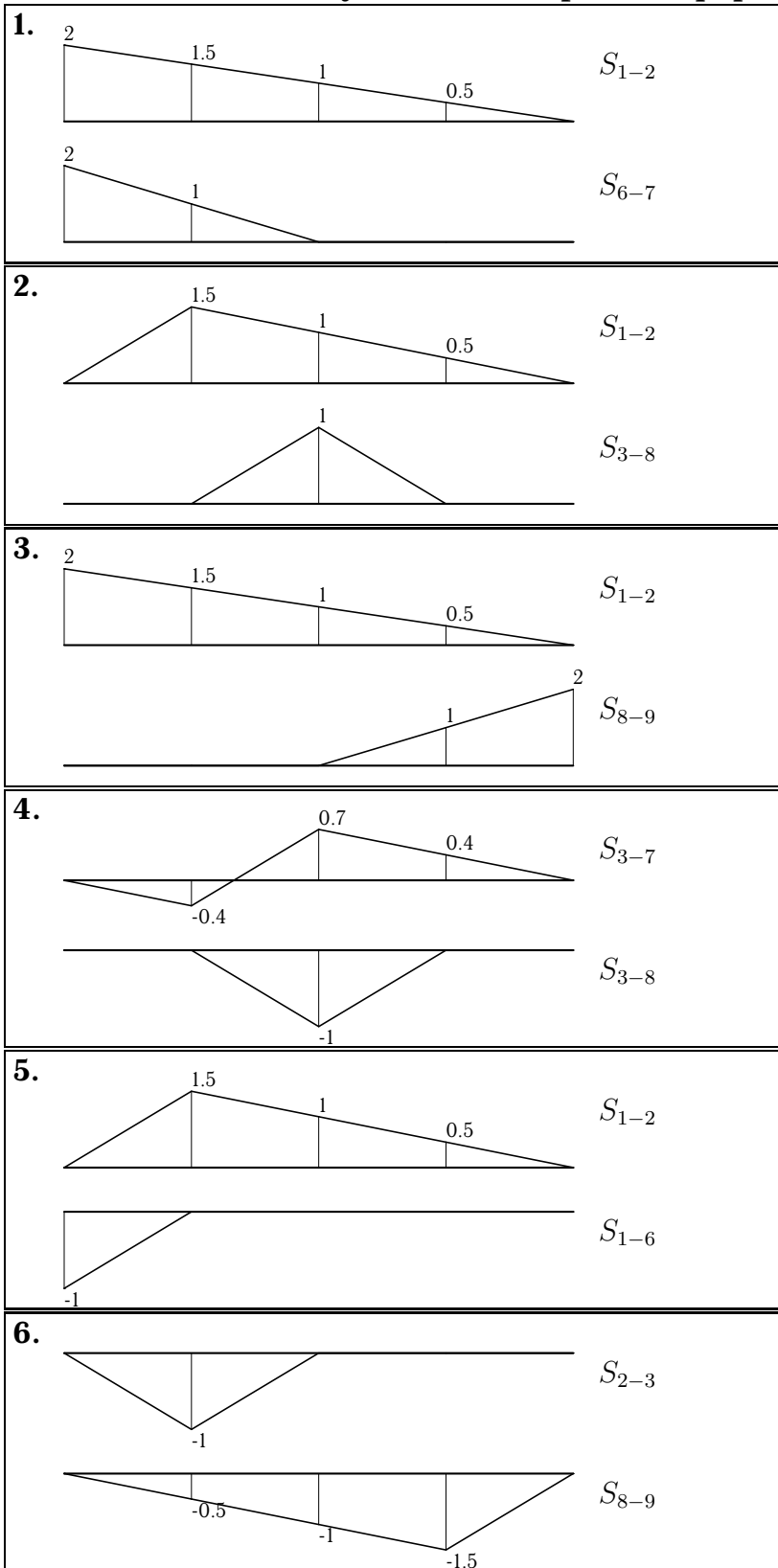
3

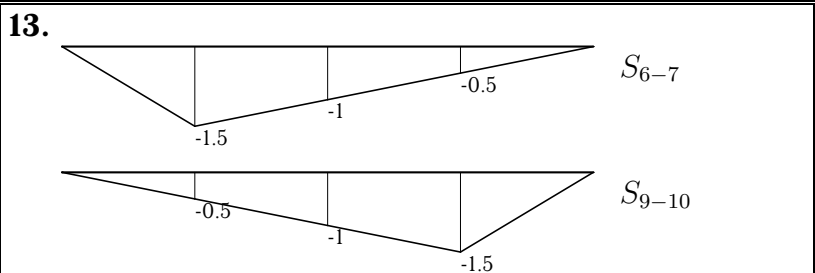
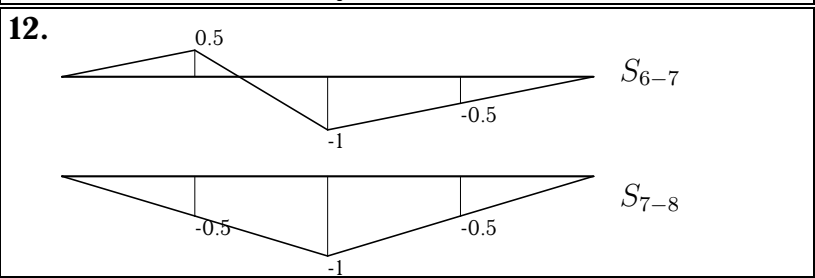
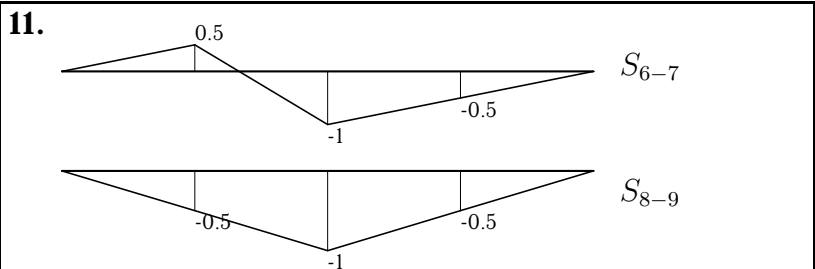
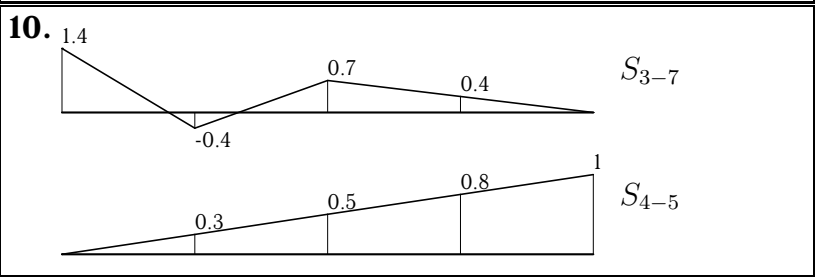
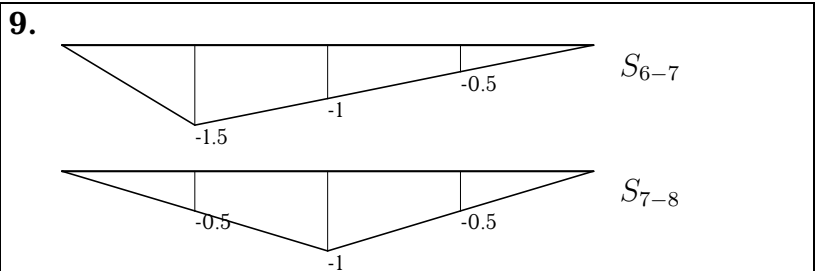
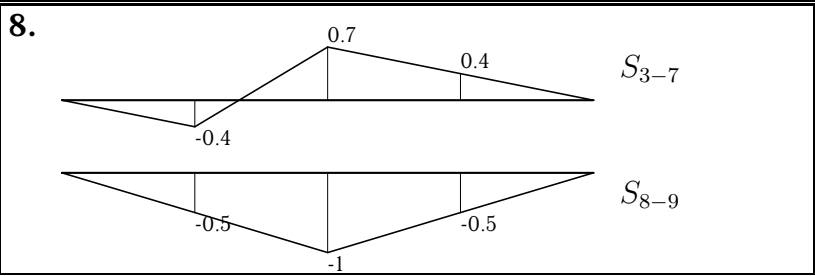
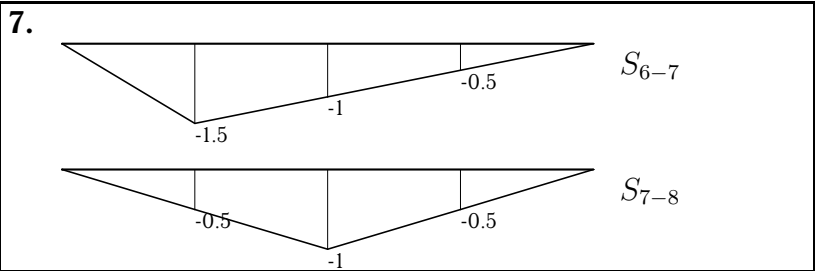


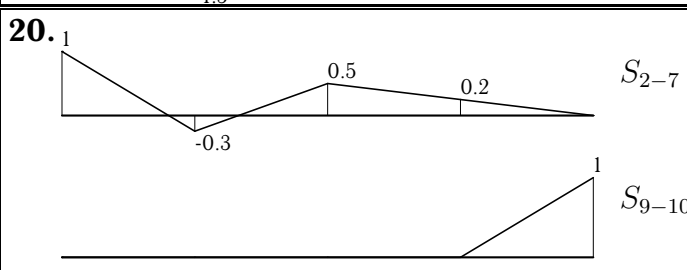
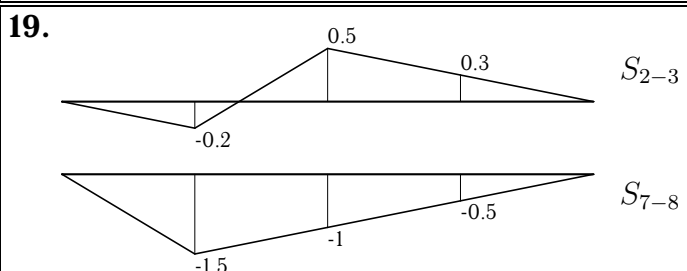
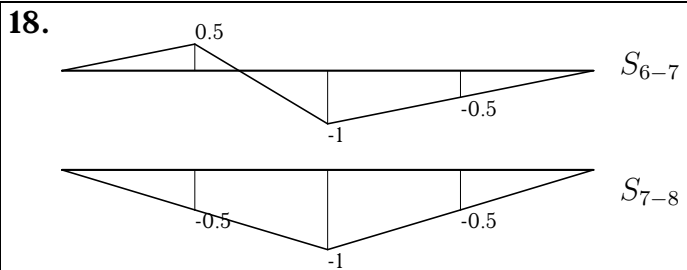
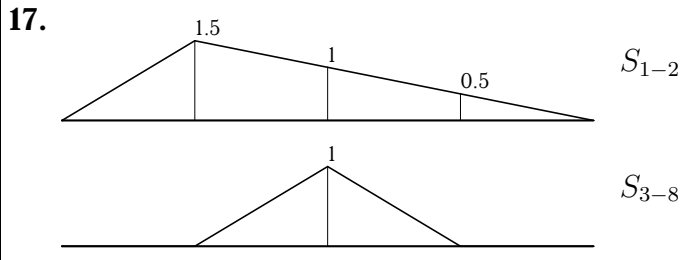
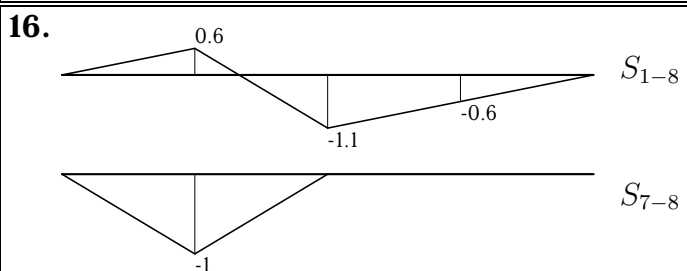
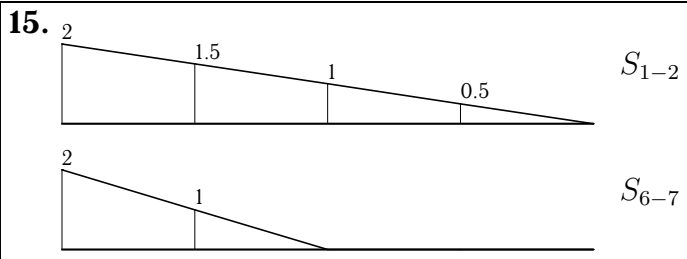
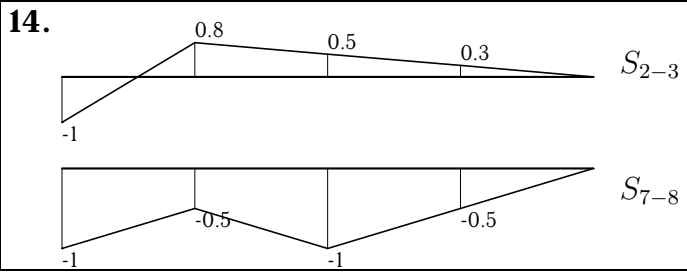
$$q_{vr} = 14 \text{ кН/м}, q_p = 4 \text{ кН/м}.$$

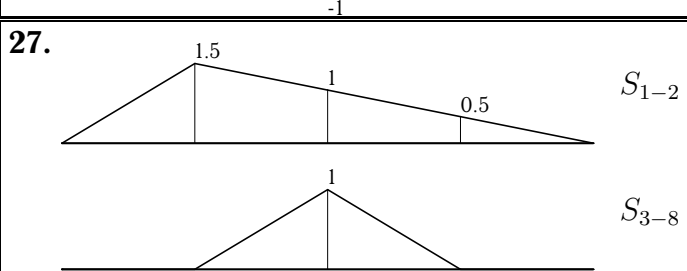
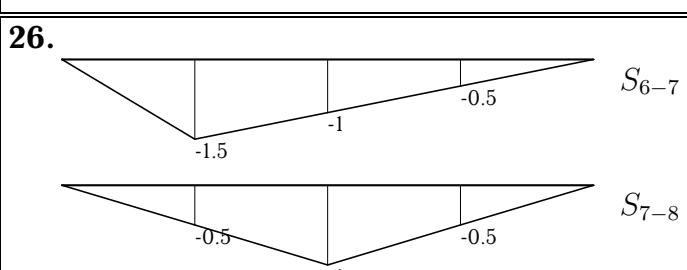
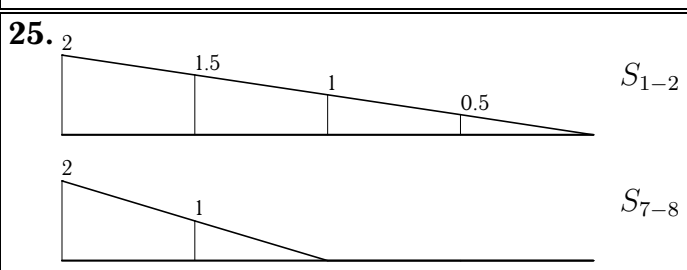
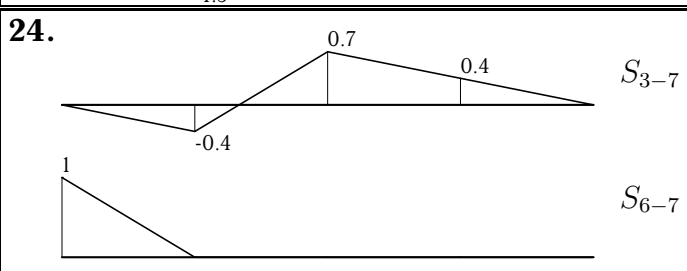
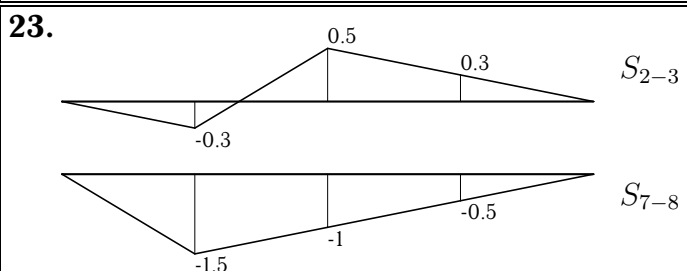
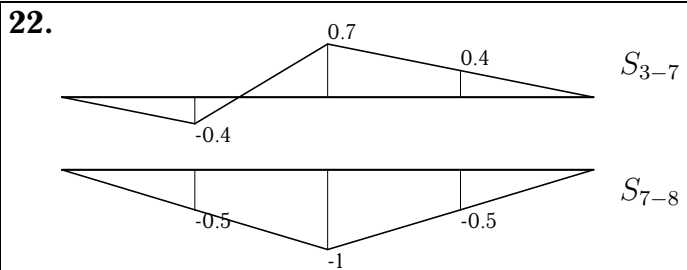
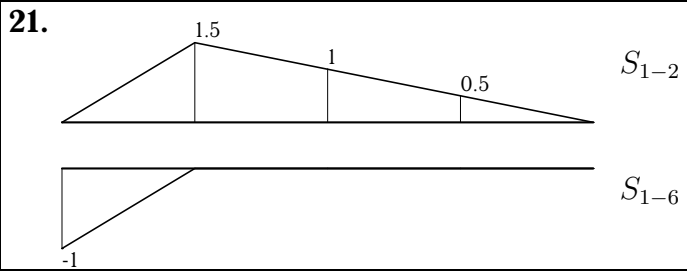
Груз понизу:  $S_{1-8}, S_{7-8}$ .

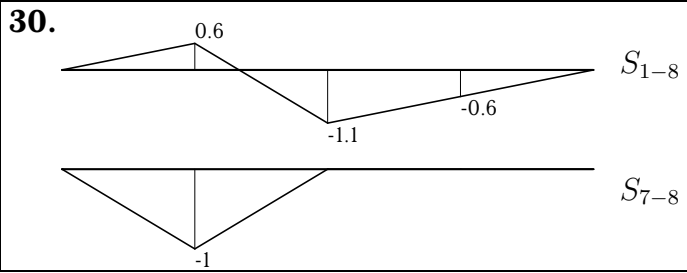
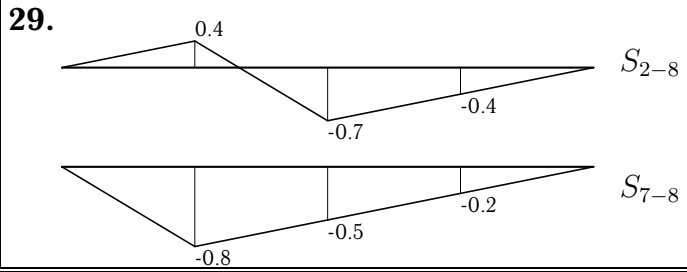
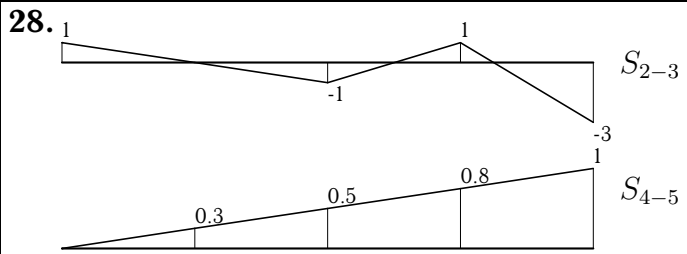
**Линии влияния усилий в стержнях фермы**













№		$S_p$	$S_{min}$	$S_{max}$		$S_p$	$S_{min}$	$S_{max}$
1	$S_{1-2}$	24.000	24.000	100.000	$S_{6-7}$	12.000	12.000	50.000
2	$S_{1-2}$	18.000	18.000	57.000	$S_{3-8}$	6.000	6.000	19.000
3	$S_{1-2}$	16.000	16.000	76.000	$S_{8-9}$	8.000	8.000	38.000
4	$S_{3-7}$	3.536	0.471	15.792	$S_{3-8}$	-5.000	-18.000	-5.000
5	$S_{1-2}$	21.000	21.000	69.000	$S_{1-6}$	-3.500	-11.500	-3.500
6	$S_{2-3}$	-3.000	-21.000	-3.000	$S_{8-9}$	-9.000	-63.000	-9.000
7	$S_{6-7}$	-15.000	-66.000	-15.000	$S_{7-8}$	-10.000	-44.000	-10.000
8	$S_{3-7}$	3.536	-0.236	18.620	$S_{8-9}$	-10.000	-42.000	-10.000
9	$S_{6-7}$	-15.000	-69.000	-15.000	$S_{7-8}$	-10.000	-46.000	-10.000
10	$S_{3-7}$	8.485	6.694	37.147	$S_{4-5}$	12.000	12.000	50.000
11	$S_{6-7}$	-3.000	-27.000	3.000	$S_{8-9}$	-6.000	-42.000	-6.000
12	$S_{6-7}$	-4.000	-29.333	2.333	$S_{7-8}$	-8.000	-46.000	-8.000
13	$S_{6-7}$	-9.000	-66.000	-9.000	$S_{9-10}$	-9.000	-66.000	-9.000
14	$S_{2-3}$	3.000	-2.429	27.429	$S_{7-8}$	-7.500	-55.000	-7.500
15	$S_{1-2}$	24.000	24.000	76.000	$S_{6-7}$	12.000	12.000	38.000
16	$S_{1-8}$	-5.590	-24.969	-0.745	$S_{7-8}$	-5.000	-18.000	-5.000
17	$S_{1-2}$	12.000	12.000	54.000	$S_{3-8}$	4.000	4.000	18.000
18	$S_{6-7}$	-5.000	-25.000	0.000	$S_{7-8}$	-10.000	-40.000	-10.000
19	$S_{2-3}$	2.000	-1.167	14.667	$S_{7-8}$	-12.000	-69.000	-12.000
20	$S_{2-7}$	5.000	4.133	18.867	$S_{9-10}$	2.500	2.500	9.000
21	$S_{1-2}$	12.000	12.000	63.000	$S_{1-6}$	-2.000	-10.500	-2.000
22	$S_{3-7}$	4.950	1.650	18.149	$S_{7-8}$	-14.000	-42.000	-14.000
23	$S_{2-3}$	3.000	-0.167	15.667	$S_{7-8}$	-18.000	-75.000	-18.000
24	$S_{3-7}$	4.243	-0.236	22.156	$S_{6-7}$	3.000	3.000	12.500
25	$S_{1-2}$	20.000	20.000	76.000	$S_{7-8}$	10.000	10.000	38.000
26	$S_{6-7}$	-21.000	-72.000	-21.000	$S_{7-8}$	-14.000	-48.000	-14.000
27	$S_{1-2}$	21.000	21.000	63.000	$S_{3-8}$	7.000	7.000	21.000
28	$S_{2-3}$	-7.000	-37.000	7.000	$S_{4-5}$	14.000	14.000	46.000
29	$S_{2-8}$	-2.121	-19.092	2.121	$S_{7-8}$	-4.500	-31.500	-4.500
30	$S_{1-8}$	-4.472	-25.342	0.745	$S_{7-8}$	-4.000	-18.000	-4.000