

Пространственная ферма

Найти усилия в стержнях 1–6 пространственной фермы, нагруженной в одном узле вертикальной силой \vec{G} и горизонтальной \vec{F} . Ответ выразить в кН.

Кирсанов М.Н. **Решебник. Теоретическая механика**/Под ред. А. И. Кириллова.– М.:ФИЗМАТЛИТ, 2002.– 384 с. (с.86.)

Задача 11.1. 5

$G = 9 \text{ кН},$
 $F = 4 \text{ кН}.$

$a = 7 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 3 \text{ м}.$

Задача 11.2. 5

$G = 7 \text{ кН},$
 $F = 2 \text{ кН}.$

$a = 5 \text{ м}, b = 4 \text{ м}, c = 3 \text{ м}, d = 1 \text{ м}.$

Задача 11.3. 5

$G = 7 \text{ кН},$
 $F = 8 \text{ кН}.$

$a = 3 \text{ м}, b = 4 \text{ м}, c = 3 \text{ м}, d = 1 \text{ м}.$

Задача 11.4. 5

$G = 8 \text{ кН},$
 $F = 1 \text{ кН}.$

$a = 4 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 4 \text{ м}.$

Задача 11.5. 5

$G = 12 \text{ кН},$
 $F = 2 \text{ кН}.$

$a = 7 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 4 \text{ м}.$

Задача 11.6. 5

$G = 9 \text{ кН},$
 $F = 2 \text{ кН}.$

$a = 4 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 4 \text{ м}.$

Задача 11.7. 5

$G = 11 \text{ кН},$
 $F = 8 \text{ кН}.$

$a = 6 \text{ м}, b = 5 \text{ м}, c = 4 \text{ м}, d = 2 \text{ м}.$

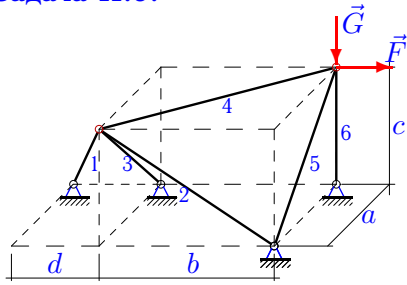
Задача 11.8. 5

$G = 8 \text{ кН},$
 $F = 2 \text{ кН}.$

$a = 4 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 3 \text{ м}.$

Задача 11.9.

5

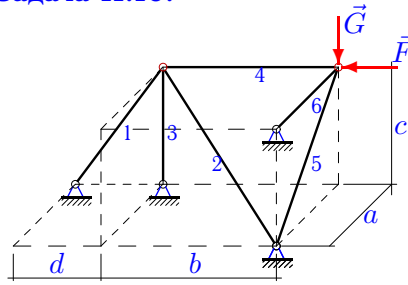


$G = 13 \text{ кН},$
 $F = 2 \text{ кН}.$

$a = 7 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 4 \text{ м}.$

Задача 11.10.

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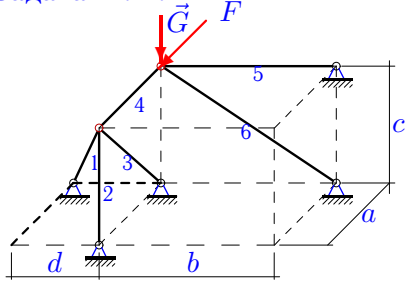


$G = 4 \text{ кН},$
 $F = 8 \text{ кН}.$

$a = 2 \text{ м}, b = 3 \text{ м}, c = 4 \text{ м}, d = 2 \text{ м}.$

Задача 11.11.

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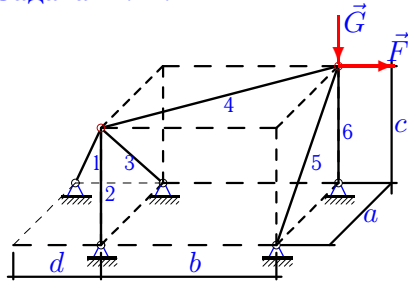


$G = 10 \text{ кН},$
 $F = 1 \text{ кН}.$

$a = 7 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 4 \text{ м}.$

Задача 11.12.

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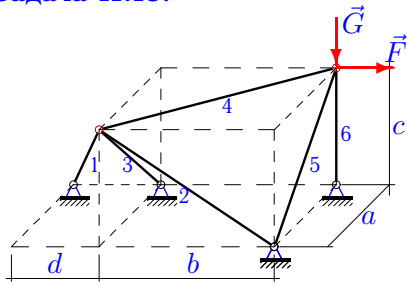


$G = 6 \text{ кН},$
 $F = 1 \text{ кН}.$

$a = 2 \text{ м}, b = 3 \text{ м}, c = 4 \text{ м}, d = 3 \text{ м}.$

Задача 11.13.

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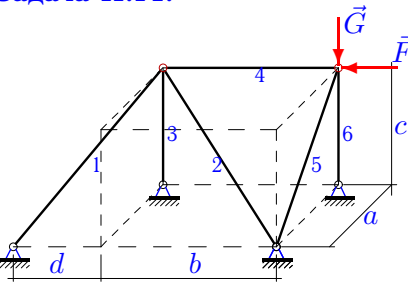


$G = 11 \text{ кН},$
 $F = 2 \text{ кН}.$

$a = 4 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 4 \text{ м}.$

Задача 11.14.

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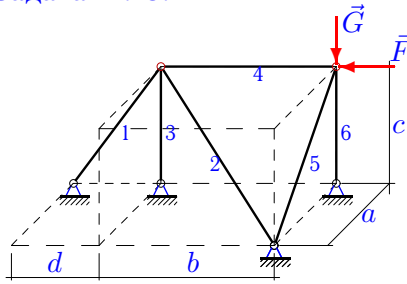


$G = 10 \text{ кН},$
 $F = 8 \text{ кН}.$

$a = 3 \text{ м}, b = 4 \text{ м}, c = 3 \text{ м}, d = 1 \text{ м}.$

Задача 11.15.

5

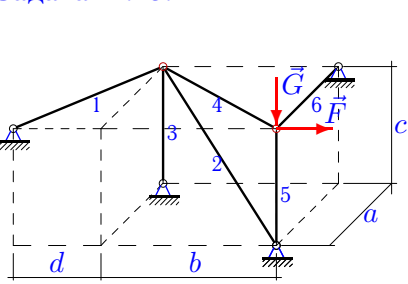


$G = 12 \text{ кН},$
 $F = 8 \text{ кН}.$

$a = 5 \text{ м}, b = 4 \text{ м}, c = 3 \text{ м}, d = 1 \text{ м}.$

Задача 11.16.

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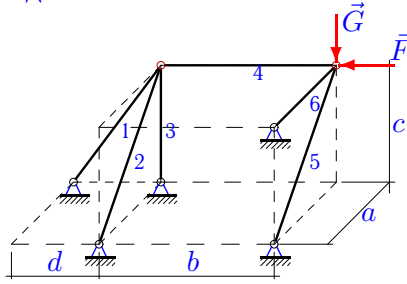


$G = 7 \text{ кН},$
 $F = 2 \text{ кН}.$

$a = 4 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 3 \text{ м}.$

Задача 11.17.

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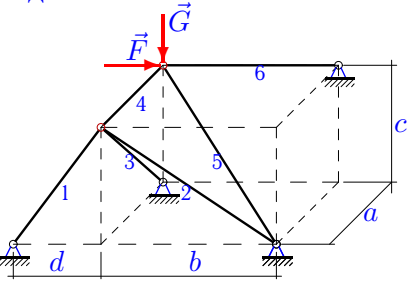


$G = 6 \text{ кН},$
 $F = 4 \text{ кН}.$

$a = 4 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 3 \text{ м}.$

Задача 11.18.

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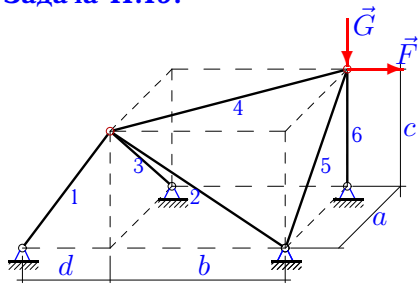


$G = 5 \text{ кН},$
 $F = 2 \text{ кН}.$

$a = 2 \text{ м}, b = 3 \text{ м}, c = 4 \text{ м}, d = 3 \text{ м}.$

Задача 11.19.

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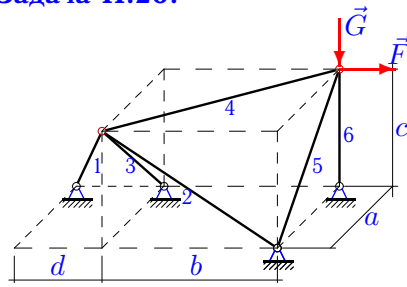


$G = 14 \text{ кН},$
 $F = 2 \text{ кН}.$

$a = 7 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 4 \text{ м}.$

Задача 11.20.

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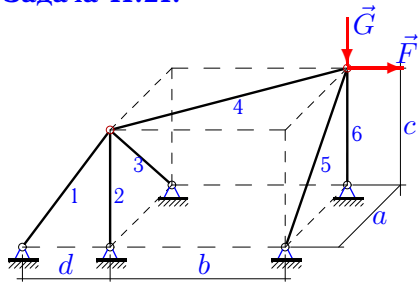


$G = 9 \text{ кН},$
 $F = 2 \text{ кН}.$

$a = 4 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 4 \text{ м}.$

Задача 11.21.

5

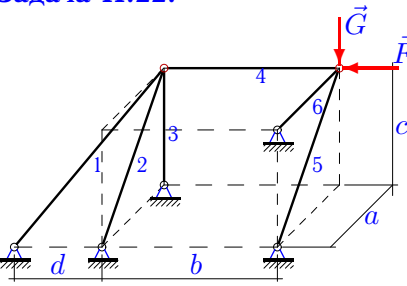


$G = 9 \text{ кН},$
 $F = 1 \text{ кН}.$

$a = 6 \text{ м}, b = 5 \text{ м}, c = 4 \text{ м}, d = 3 \text{ м}.$

Задача 11.22.

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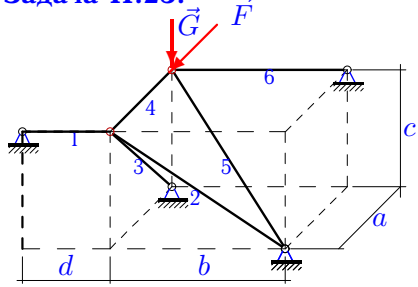


$G = 7 \text{ кН},$
 $F = 4 \text{ кН}.$

$a = 5 \text{ м}, b = 4 \text{ м}, c = 3 \text{ м}, d = 1 \text{ м}.$

Задача 11.23.

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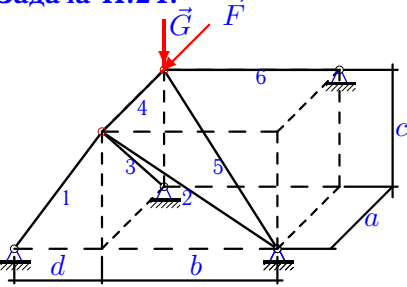


$G = 8 \text{ кН},$
 $F = 2 \text{ кН}.$

$a = 4 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 4 \text{ м}.$

Задача 11.24.

5

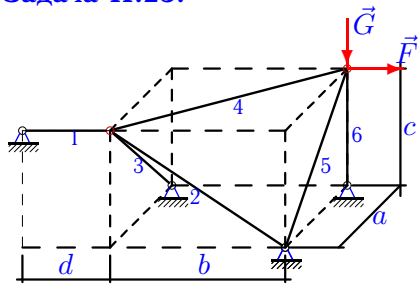


$G = 10 \text{ кН},$
 $F = 2 \text{ кН}.$

$a = 6 \text{ м}, b = 5 \text{ м}, c = 4 \text{ м}, d = 3 \text{ м}.$

Задача 11.25.

5

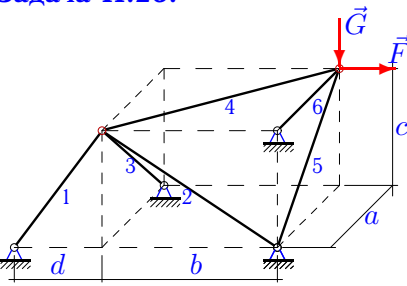


$G = 14 \text{ кН},$
 $F = 2 \text{ кН}.$

$a = 7 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 4 \text{ м}.$

Задача 11.26.

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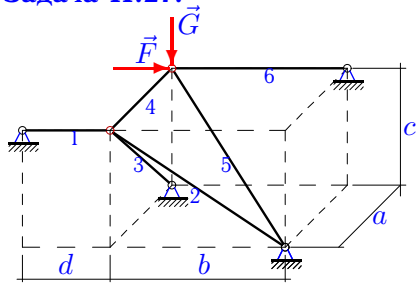


$G = 5 \text{ кН},$
 $F = 2 \text{ кН}.$

$a = 2 \text{ м}, b = 3 \text{ м}, c = 4 \text{ м}, d = 3 \text{ м}.$

Задача 11.27.

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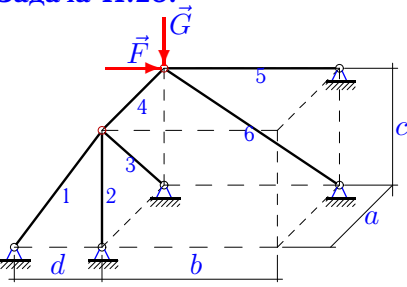


$G = 9 \text{ кН},$
 $F = 2 \text{ кН}.$

$a = 3 \text{ м}, b = 4 \text{ м}, c = 3 \text{ м}, d = 2 \text{ м}.$

Задача 11.28.

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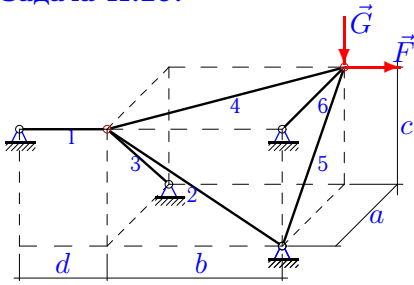


$G = 13 \text{ кН},$
 $F = 1 \text{ кН}.$

$a = 7 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 4 \text{ м}.$

Задача 11.29.

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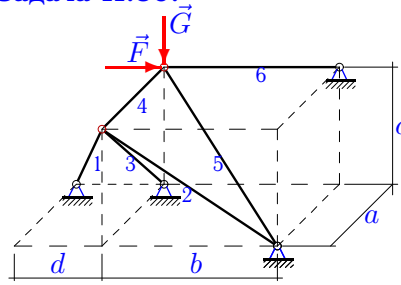


$G = 9 \text{ кН},$
 $F = 2 \text{ кН}.$

$a = 7 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 4 \text{ м}.$

Задача 11.30.

5

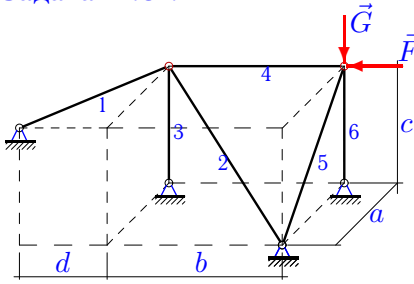


$G = 12 \text{ кН},$
 $F = 2 \text{ кН}.$

$a = 7 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 4 \text{ м}.$

Задача 11.31.

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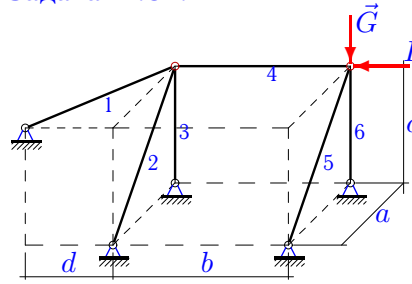


$G = 11 \text{ кН},$
 $F = 8 \text{ кН}.$

$a = 7 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 3 \text{ м}.$

Задача 11.32.

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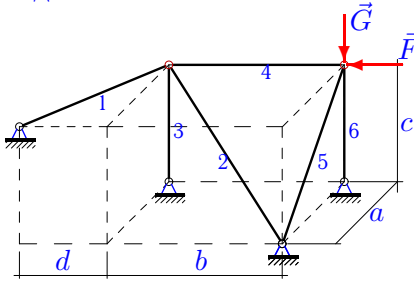


$G = 9 \text{ кН},$
 $F = 4 \text{ кН}.$

$a = 5 \text{ м}, b = 4 \text{ м}, c = 3 \text{ м}, d = 1 \text{ м}.$

Задача 11.33.

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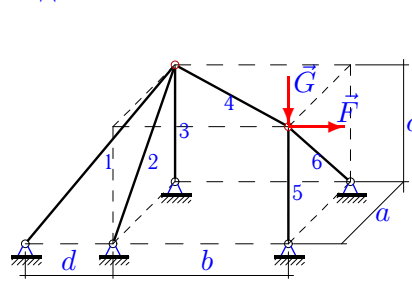


$G = 12 \text{ кН},$
 $F = 8 \text{ кН}.$

$a = 5 \text{ м}, b = 4 \text{ м}, c = 3 \text{ м}, d = 1 \text{ м}.$

Задача 11.34.

5



$G = 9 \text{ кН},$
 $F = 1 \text{ кН}.$

$a = 4 \text{ м}, b = 6 \text{ м}, c = 5 \text{ м}, d = 3 \text{ м}.$

Пространственная ферма

	S_1	S_2	S_3	S_4	S_5	S_6
1	-7.775	-0.000	6.667	-4.000	-15.484	12.600
2	-0.000	-3.536	1.500	3.202	-7.000	-2.500
3	-6.974	9.330	-0.000	-8.000	-0.000	-7.000
4	-0.000	-0.000	-0.000	-0.000	8.600	-12.496
5	34.153	18.745	-51.614	16.800	-25.171	12.400
6	4.000	2.603	-2.134	2.404	-2.134	-7.333
7	-7.228	10.029	-4.571	-8.000	-0.000	-11.000
8	-0.000	-2.925	1.667	2.404	-6.333	-2.134
9	9.487	2.603	-11.470	3.073	-2.867	-11.333
10	-17.889	-0.000	16.000	-8.000	-4.472	2.000
11	0.000	-0.714	1.229	-1.000	12.000	-15.620
12	1.795	1.333	-2.981	1.202	-1.491	-4.667
13	7.550	2.603	-8.537	2.404	-2.134	-9.333
14	-6.974	9.330	-0.000	-8.000	-0.000	-10.000
15	-25.298	-0.000	24.000	-8.000	-0.000	-12.000
16	-0.000	-2.925	1.667	2.404	-7.000	-1.333
17	-7.775	-0.000	6.667	-4.000	-7.684	4.800
18	3.125	3.125	-5.590	2.500	-6.731	1.750
19	2.561	-0.521	-2.867	3.073	-2.867	-12.333
20	7.550	2.603	-8.537	2.404	-2.134	-7.333
21	1.667	-0.533	-1.442	1.562	-1.442	-8.200
22	-23.664	23.324	0.000	-4.000	-13.606	11.667
23	6.600	8.591	-7.043	4.400	-14.040	9.600
24	6.771	5.203	-15.624	13.000	-21.937	12.500
25	4.000	2.603	-2.867	3.073	-2.867	-12.333
26	3.333	-0.000	-2.981	2.404	-5.590	1.167
27	12.000	15.000	-12.728	9.000	-17.493	10.000
28	-0.000	-0.000	-0.000	-0.000	14.600	-20.307
29	4.000	2.603	-2.867	3.073	-15.484	10.267
30	34.153	18.745	-51.614	16.800	-25.171	12.400
31	-6.770	9.323	-4.444	-8.000	-0.000	-11.000
32	-20.396	23.324	-12.000	-4.000	-0.000	-9.000
33	-8.158	11.314	-4.800	-8.000	-0.000	-12.000
34	2.357	-3.202	0.833	1.202	-8.167	-1.067