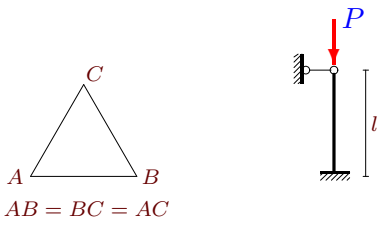
Подбор сечения продольно сжатого стержня

Прямолинейный стержень длиной l сжимается продольной силой P. Подобрать размер b сечения стержня пользуясь таблицей коэффициентов φ снижения допускаемых напряжений $[\sigma]$. Принять точность вычисления φ равной 5%.

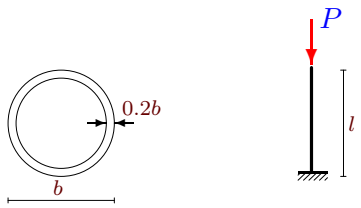
Задача 32.1. 2

Сталь 5, $[\sigma] = 240$ МПа, $l = 3.5$ м, $P = 120$ кН.



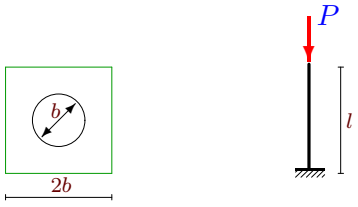
Задача 32.2. 2

Сталь 5, $[\sigma] = 240$ МПа, $l = 1.1$ м, $P = 410$ кН.



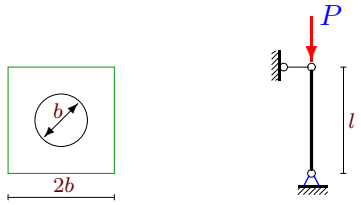
Задача 32.3. 2

Сталь 5, $[\sigma] = 240$ МПа, $l = 1.2$ м, $P = 990$ кН.



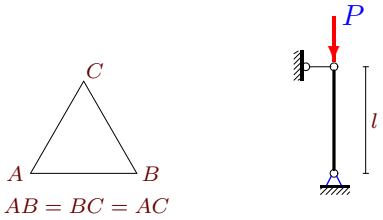
Задача 32.4. 2

Чугун, $[\sigma] = 130$ МПа, $l = 1.15$ м, $P = 990$ кН.



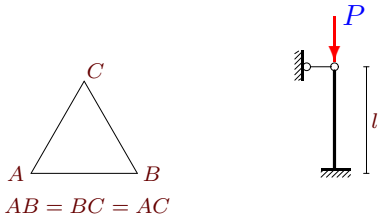
Задача 32.5. 2

Дерево, $[\sigma] = 11$ МПа, $l = 2.3$ м, $P = 90$ кН.



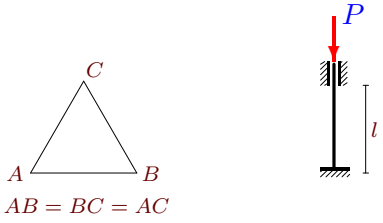
Задача 32.6. 2

Д16Т, $[\sigma] = 100$ МПа, $l = 1.9$ м, $P = 70$ кН.



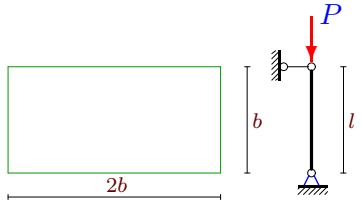
Задача 32.7. 2

Чугун, $[\sigma] = 130$ МПа, $l = 2.6$ м, $P = 60$ кН.



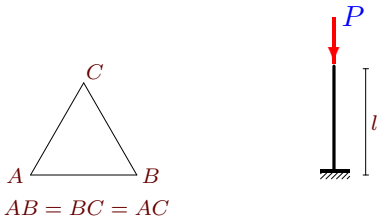
Задача 32.8. 2

Сталь 3, $[\sigma] = 160$ МПа, $l = 2.8$ м, $P = 990$ кН.



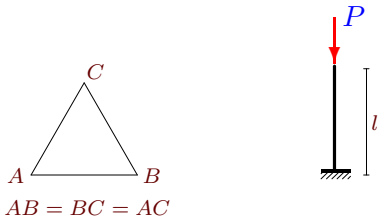
Задача 32.9. 2

Сталь 3, $[\sigma] = 160$ МПа, $l = 1.2$ м, $P = 180$ кН.



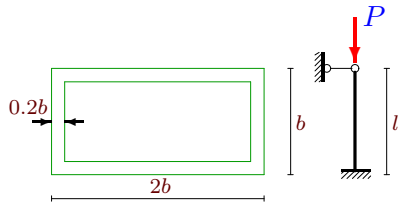
Задача 32.10. 2

Дерево, $[\sigma] = 11$ МПа, $l = 1.2$ м, $P = 10$ кН.



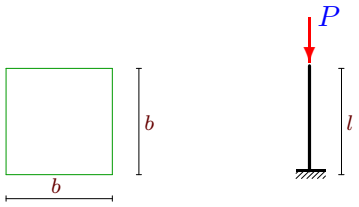
Задача 32.11. 2

Сталь 3, $[\sigma] = 160$ МПа, $l = 3.4$ м, $P = 600$ кН.



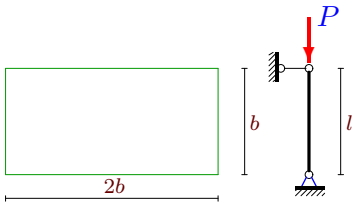
Задача 32.12. 2

Д16Т, $[\sigma] = 100$ МПа, $l = 0.7$ м, $P = 500$ кН.



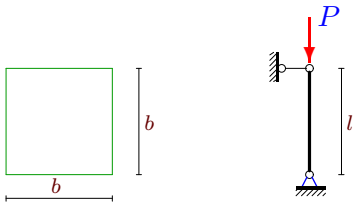
Задача 32.13. 2

Сталь 5, $[\sigma] = 240$ МПа, $l = 2.5$ м, $P = 990$ кН.



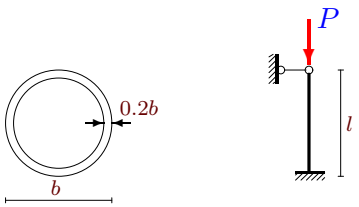
Задача 32.14. 2

Д16Т, $[\sigma] = 100$ МПа, $l = 1.25$ м, $P = 350$ кН.



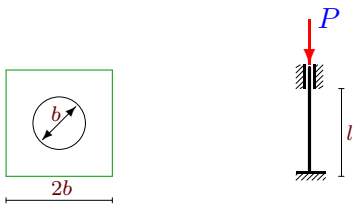
Задача 32.15. 2

Сталь 3, $[\sigma] = 160$ МПа, $l = 3.3$ м, $P = 190$ кН.



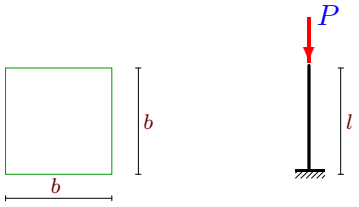
Задача 32.16. 2

Чугун, $[\sigma] = 130$ МПа, $l = 2.6$ м, $P = 990$ кН.



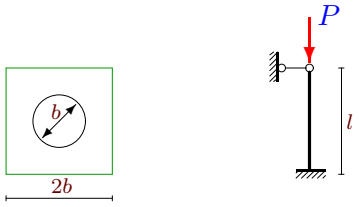
Задача 32.17. 2

Д16Т, $[\sigma] = 100$ МПа, $l = 0.6$ м, $P = 380$ кН.



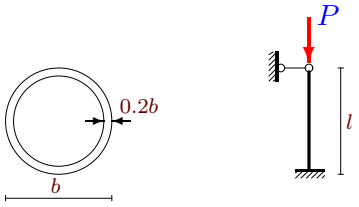
Задача 32.18. 2

Сталь 3, $[\sigma] = 160$ МПа, $l = 3.4$ м, $P = 990$ кН.



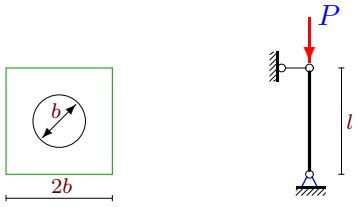
Задача 32.19. 2

Д16Т, $[\sigma] = 100$ МПа, $l = 1.7$ м, $P = 150$ кН.



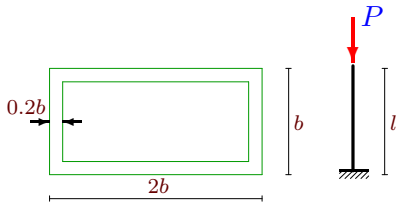
Задача 32.20. 2

Дерево, $[\sigma] = 11$ МПа, $l = 2.2$ м, $P = 140$ кН.



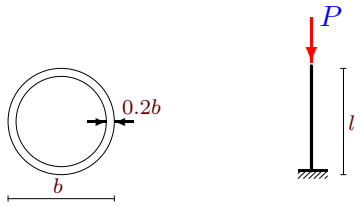
Задача 32.21. 2

Сталь 3, $[\sigma] = 160$ МПа, $l = 1.2$ м, $P = 950$ кН.



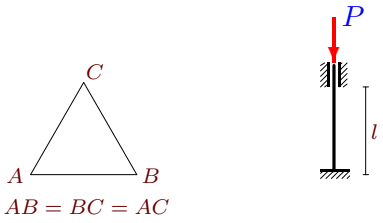
Задача 32.22. 2

Чугун, $[\sigma] = 130$ МПа, $l = 0.6$ м, $P = 320$ кН.



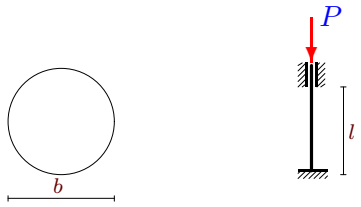
Задача 32.23. 2

Сталь 5, $[\sigma] = 240$ МПа, $l = 4.7$ м, $P = 80$ кН.



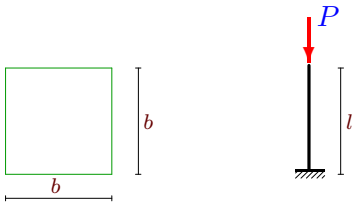
Задача 32.24. 2

Д16Т, $[\sigma] = 100$ МПа, $l = 2.65$ м, $P = 150$ кН.



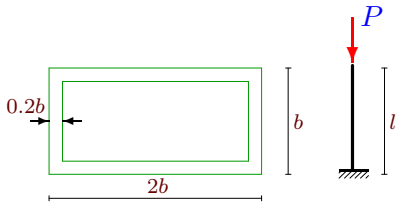
Задача 32.25. 2

Дерево, $[\sigma] = 11$ МПа, $l = 1.3$ м, $P = 30$ кН.



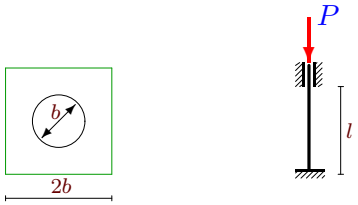
Задача 32.26. 2

Д16Т, $[\sigma] = 100$ МПа, $l = 0.6$ м, $P = 620$ кН.



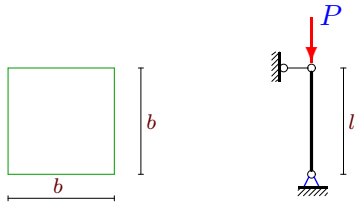
Задача 32.27. 2

Чугун, $[\sigma] = 130$ МПа, $l = 2.25$ м, $P = 990$ кН.



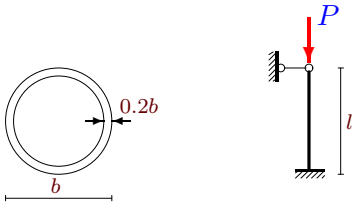
Задача 32.28. 2

Сталь 3, $[\sigma] = 160$ МПа, $l = 2.5$ м, $P = 510$ кН.



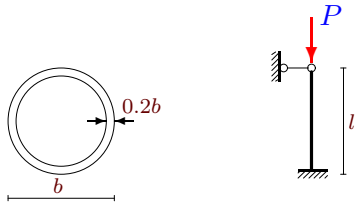
Задача 32.29. 2

Сталь 5, $[\sigma] = 240$ МПа, $l = 3$ м, $P = 210$ кН.



Задача 32.30. 2

Сталь 5, $[\sigma] = 240$ МПа, $l = 3$ м, $P = 210$ кН.



32.2

Подбор сечения продольно сжатого стержня

№	b	λ	μ
1	7.255	165.447	0.7
2	7.913	95.361	2.0
3	4.494	84.489	2.0
4	5.519	32.966	1.0
5	17.123	65.803	1.0
6	7.925	82.215	0.7
7	7.175	88.765	0.5
8	8.187	118.479	1.0
9	8.458	139.015	2.0
10	9.792	120.079	2.0
11	7.239	90.300	0.7
12	9.468	51.222	2.0
13	7.343	117.933	1.0
14	8.104	53.432	1.0
15	6.937	114.220	0.7
16	5.666	36.302	0.5
17	8.201	50.687	2.0
18	4.974	75.708	0.7
19	7.538	54.146	0.7
20	7.035	49.477	1.0
21	8.598	76.664	2.0
22	8.904	46.224	2.0
23	6.380	180.454	0.5
24	7.462	71.028	0.5
25	9.176	98.156	2.0
26	8.942	36.857	2.0
27	5.495	32.391	0.5
28	7.846	110.385	1.0
29	6.435	111.934	0.7
30	6.435	111.934	0.7