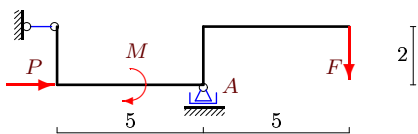


Равновесие рамы с трением

Одна из опор рамы — негладкая неударяющая шарнирная опора в точке A (односторонняя связь). Заданы нагрузки P и M и коэффициент трения скольжения в опоре A . Размеры на рисунке даны в метрах. Для каких значений силы F система находится в положении равновесия?

Задача S-10.1.

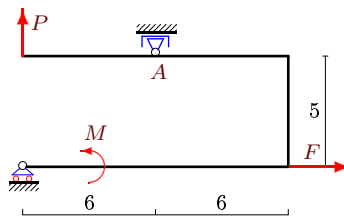
19



$$P = 64 \text{ кН}, M = 120 \text{ кНм}, f_{\text{тр}} = 3/2.$$

Задача S-10.2.

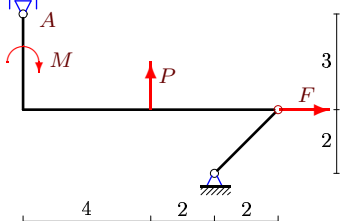
19



$$P = 11 \text{ кН}, M = 1755 \text{ кНм}, f_{\text{тр}} = 3/4.$$

Задача S-10.3.

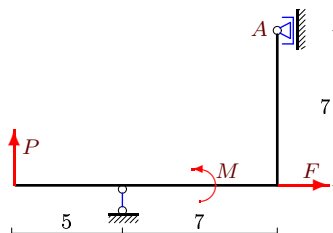
19



$$P = 18 \text{ кН}, M = 18 \text{ кНм}, f_{\text{тр}} = 2/3.$$

Задача S-10.4.

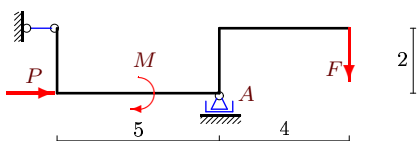
19



$$P = 31 \text{ кН}, M = 8 \text{ кНм}, f_{\text{тр}} = 1/2.$$

Задача S-10.5.

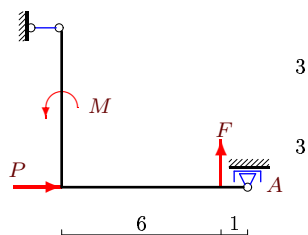
19



$$P = 26 \text{ кН}, M = 13 \text{ кНм}, f_{\text{тр}} = 5/4.$$

Задача S-10.6.

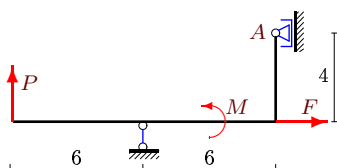
19



$$P = 1 \text{ кН}, M = 2 \text{ кНм}, f_{\text{тр}} = 1/2.$$

Задача S-10.7.

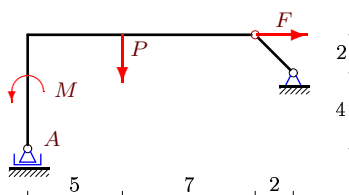
19



$$P = 45 \text{ кН}, M = 50 \text{ кНм}, f_{\text{тр}} = 1/4.$$

Задача S-10.8.

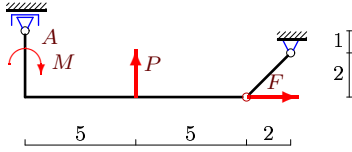
19



$$P = 10 \text{ кН}, M = 20 \text{ кНм}, f_{\text{тр}} = 1/2.$$

Задача S-10.9.

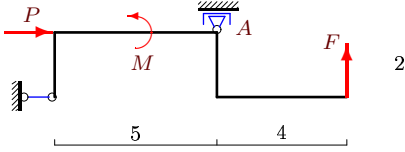
19



$P = 72 \text{ кН}, M = 144 \text{ кНм}, f_{TP} = 2/3.$

Задача S-10.10.

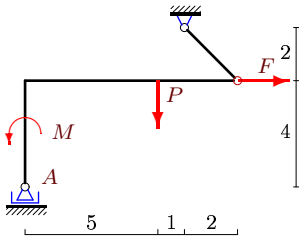
19



$P = 78 \text{ кН}, M = 117 \text{ кНм}, f_{TP} = 5/4.$

Задача S-10.11.

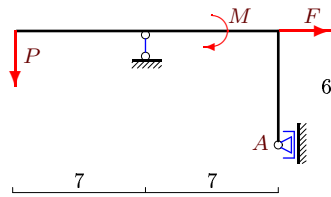
19



$P = 5 \text{ кН}, M = 5 \text{ кНм}, f_{TP} = 1/2.$

Задача S-10.12.

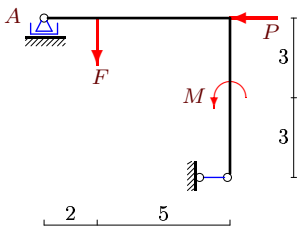
19



$P = 76 \text{ кН}, M = 5 \text{ кНм}, f_{TP} = 1/4.$

Задача S-10.13.

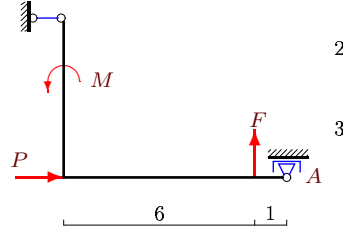
19



$P = 8 \text{ кН}, M = 222 \text{ кНм}, f_{TP} = 2/3.$

Задача S-10.14.

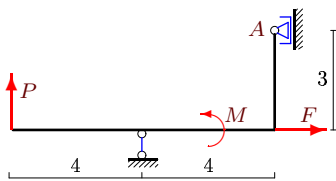
19



$P = 2 \text{ кН}, M = 95 \text{ кНм}, f_{TP} = 1/2.$

Задача S-10.15.

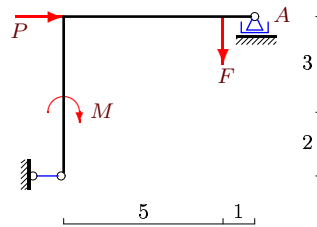
19



$P = 41 \text{ кН}, M = 36 \text{ кНм}, f_{TP} = 1/4.$

Задача S-10.16.

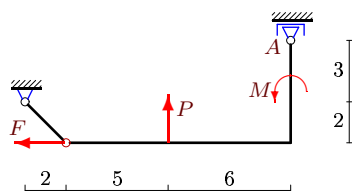
19



$P = 3 \text{ кН}, M = 6 \text{ кНм}, f_{TP} = 1/2.$

Задача S-10.17.

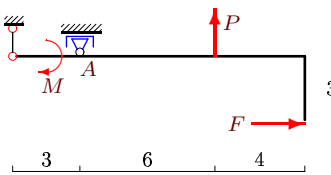
19



$P = 989 \text{ кН}, M = 1978 \text{ кНм}, f_{TP} = 2/3.$

Задача S-10.18.

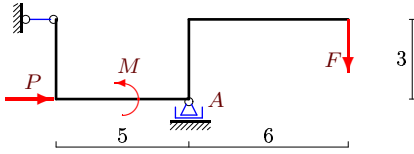
19



$P = 10 \text{ кН}, M = 45 \text{ кНм}, f_{TP} = 2/3.$

Задача S-10.19.

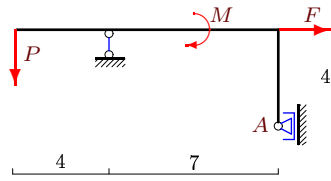
19



$P = 117 \text{ кН}, M = 234 \text{ кНм}, f_{\text{ТР}} = 5/4.$

Задача S-10.20.

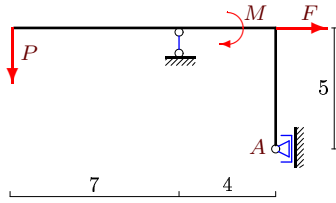
19



$P = 93 \text{ кН}, M = 21 \text{ кНм}, f_{\text{ТР}} = 1/5.$

Задача S-10.21.

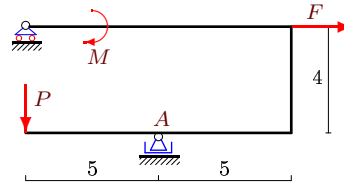
19



$P = 131 \text{ кН}, M = 33 \text{ кНм}, f_{\text{ТР}} = 1/6.$

Задача S-10.22.

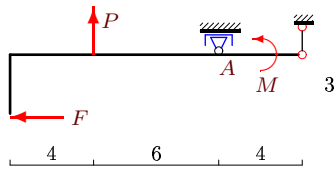
19



$P = 7 \text{ кН}, M = 161 \text{ кНм}, f_{\text{ТР}} = 2/3.$

Задача S-10.23.

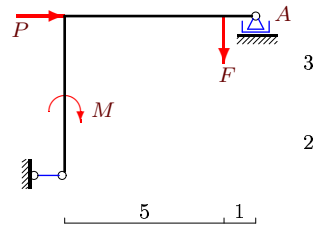
19



$P = 17 \text{ кН}, M = 42 \text{ кНм}, f_{\text{ТР}} = 4/5.$

Задача S-10.24.

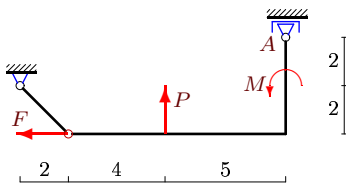
19



$P = 3 \text{ кН}, M = 27 \text{ кНм}, f_{\text{ТР}} = 1/2.$

Задача S-10.25.

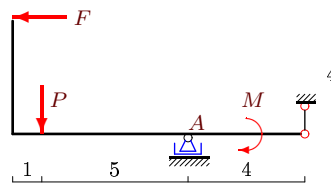
19



$P = 665 \text{ кН}, M = 1330 \text{ кНм}, f_{\text{ТР}} = 2/3.$

Задача S-10.26.

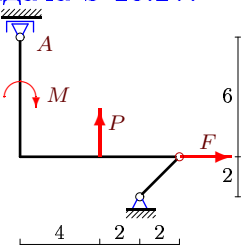
19



$P = 9 \text{ кН}, M = 25 \text{ кНм}, f_{\text{ТР}} = 3/4.$

Задача S-10.27.

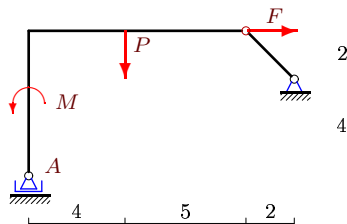
19



$P = 36 \text{ кН}, M = 36 \text{ кНм}, f_{\text{ТР}} = 2/3.$

Задача S-10.28.

19



$P = 24 \text{ кН}, M = 48 \text{ кНм}, f_{\text{ТР}} = 1/2.$

Ответы.**Равновесие рамы с трением**

16.02.2015

№	F
1	$1 < F < 4$ кН
2	$-135 < F < 585$ кН
3	$-7 < F < 15$ кН
4	$14 < F < 42$ кН
5	$6 < F < 26$ кН
6	$F > 2$ кН
7	$40 < F < 88$ кН
8	$-5 < F < 7$ кН
9	$-33 < F < 58$ кН
10	$6 < F < 26$ кН
11	$0 < F < 4$ кН
12	$68 < F < 124$ кН
13	$F > 45$ кН
14	$F > 30$ кН
15	$32 < F < 64$ кН
16	$F > 6$ кН
17	$-516 < F < 828$ кН
18	$-6 < F < 30$ кН
19	$60 < F < 260$ кН
20	$65 < F < 135$ кН
21	$156 < F < 204$ кН
22	$-14 < F < 46$ кН
23	$-16 < F < 64$ кН
24	$F > 12$ кН
25	$-385 < F < 551$ кН
26	$-6 < F < 42$ кН
27	$-39 < F < 31$ кН
28	$-18 < F < 17$ кН

S-10 файл о10s19A