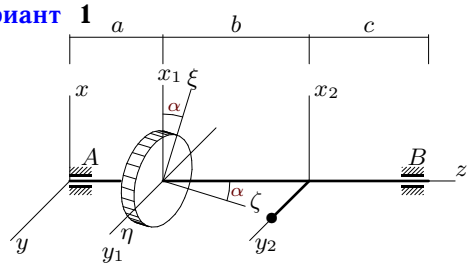
Динамические реакции вала

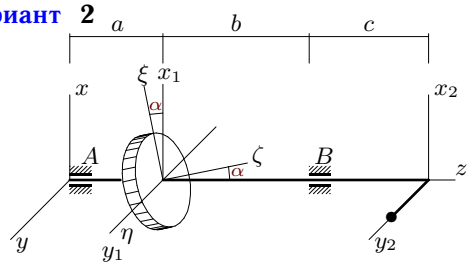
Кирсанов М.Н. **Решебник. Теоретическая механика** с. 272.

Вариант 1



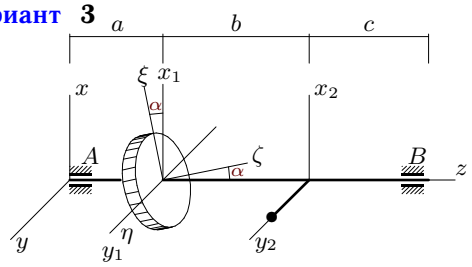
$a = 50$ см, $b = 70$ см,
$c = 60$ см, $R = 60$ см,
$m_1 = 60$ кг, $m_2 = 10$ кг,
$\alpha = 0.1$ рад, $L = 40$ см,
$M_z = 3.3$ Нм, $t = 4$ с.

Вариант 2



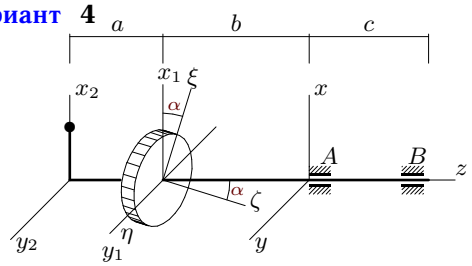
$a = 25$ см, $b = 55$ см,
$c = 40$ см, $R = 30$ см,
$m_1 = 25$ кг, $m_2 = 10$ кг,
$\alpha = 0.07$ рад, $L = 15$ см,
$M_z = 0.3$ Нм, $t = 4$ с.

Вариант 3



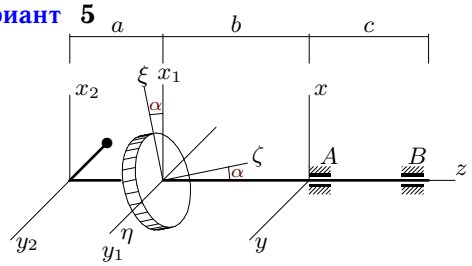
$a = 25$ см, $b = 45$ см,
$c = 35$ см, $R = 30$ см,
$m_1 = 25$ кг, $m_2 = 10$ кг,
$\alpha = 0.07$ рад, $L = 15$ см,
$M_z = 0.3$ Нм, $t = 4$ с.

Вариант 4



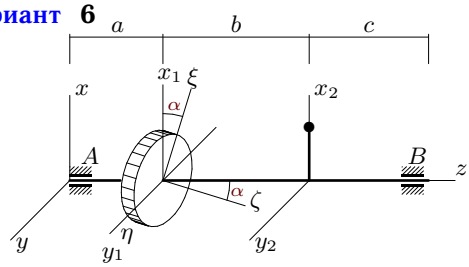
$a = 30$ см, $b = 40$ см,
$c = 35$ см, $R = 40$ см,
$m_1 = 85$ кг, $m_2 = 6$ кг,
$\alpha = 0.14$ рад, $L = 20$ см,
$M_z = 4.5$ Нм, $t = 3$ с.

Вариант 5



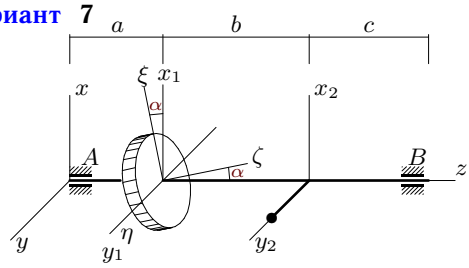
$a = 40$ см, $b = 50$ см,
$c = 45$ см, $R = 45$ см,
$m_1 = 55$ кг, $m_2 = 18$ кг,
$\alpha = 0.15$ рад, $L = 30$ см,
$M_z = 1$ Нм, $t = 6$ с.

Вариант 6



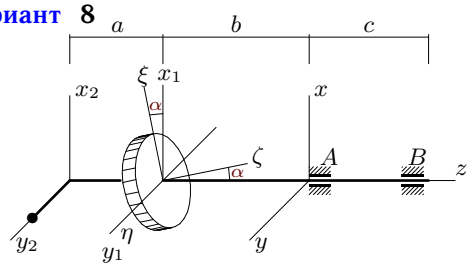
$a = 30$ см, $b = 50$ см,
$c = 40$ см, $R = 40$ см,
$m_1 = 45$ кг, $m_2 = 6$ кг,
$\alpha = 0.06$ рад, $L = 20$ см,
$M_z = 1.4$ Нм, $t = 3$ с.

Вариант 7



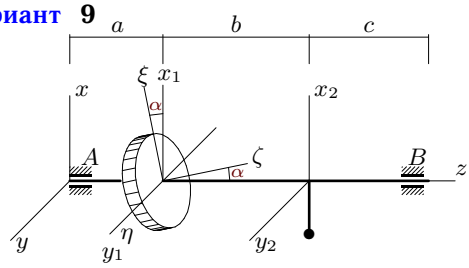
$a = 25$ см, $b = 45$ см,
$c = 35$ см, $R = 30$ см,
$m_1 = 45$ кг, $m_2 = 10$ кг,
$\alpha = 0.11$ рад, $L = 15$ см,
$M_z = 0.6$ Нм, $t = 4$ с.

Вариант 8



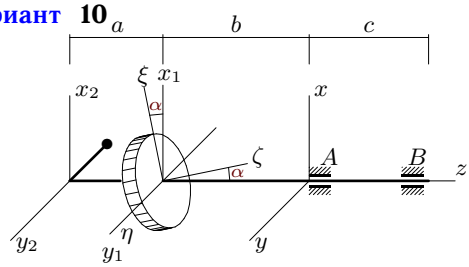
$a = 45$ см, $b = 55$ см,
$c = 50$ см, $R = 50$ см,
$m_1 = 50$ кг, $m_2 = 10$ кг,
$\alpha = 0.12$ рад, $L = 35$ см,
$M_z = 2.2$ Нм, $t = 4$ с.

Вариант 9



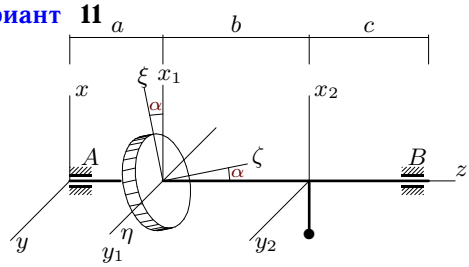
$a = 50$ см, $b = 70$ см,
$c = 60$ см, $R = 55$ см,
$m_1 = 45$ кг, $m_2 = 14$ кг,
$\alpha = 0.12$ рад, $L = 40$ см,
$M_z = 1.6$ Нм, $t = 5$ с.

Вариант 10



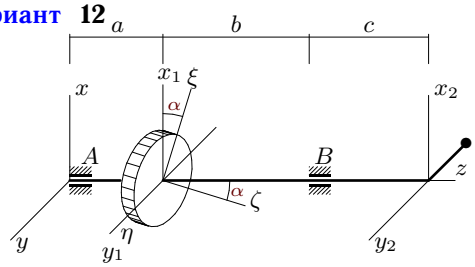
$a = 50$ см, $b = 60$ см,
$c = 55$ см, $R = 55$ см,
$m_1 = 45$ кг, $m_2 = 18$ кг,
$\alpha = 0.13$ рад, $L = 40$ см,
$M_z = 1.2$ Нм, $t = 6$ с.

Вариант 11



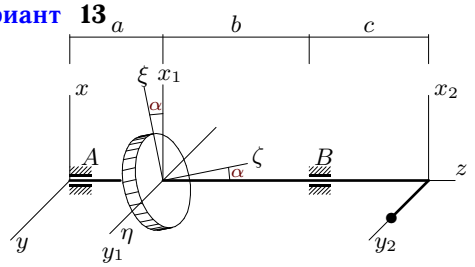
$a = 45$ см, $b = 65$ см,
$c = 55$ см, $R = 50$ см,
$m_1 = 40$ кг, $m_2 = 14$ кг,
$\alpha = 0.11$ рад, $L = 35$ см,
$M_z = 1.1$ Нм, $t = 5$ с.

Вариант 12



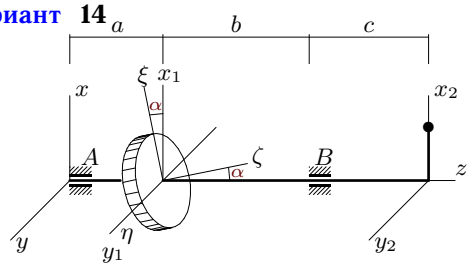
$a = 20$ см, $b = 50$ см,
$c = 35$ см, $R = 30$ см,
$m_1 = 90$ кг, $m_2 = 18$ кг,
$\alpha = 0.18$ рад, $L = 10$ см,
$M_z = 0.7$ Нм, $t = 6$ с.

Вариант 13



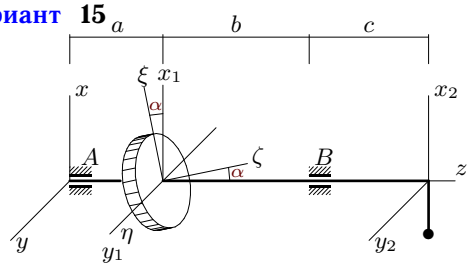
$a = 35$ см, $b = 65$ см,
$c = 50$ см, $R = 40$ см,
$m_1 = 30$ кг, $m_2 = 10$ кг,
$\alpha = 0.08$ рад, $L = 25$ см,
$M_z = 0.7$ Нм, $t = 4$ с.

Вариант 14



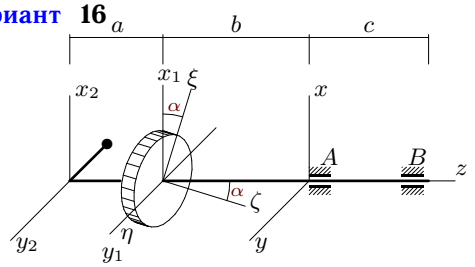
$a = 20$ см, $b = 50$ см,
$c = 35$ см, $R = 25$ см,
$m_1 = 55$ кг, $m_2 = 6$ кг,
$\alpha = 0.12$ рад, $L = 10$ см,
$M_z = 1$ Нм, $t = 3$ с.

Вариант 15



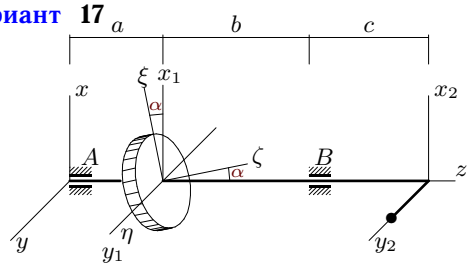
$a = 45$ см, $b = 75$ см,
$c = 60$ см, $R = 50$ см,
$m_1 = 50$ кг, $m_2 = 14$ кг,
$\alpha = 0.13$ рад, $L = 35$ см,
$M_z = 1.5$ Нм, $t = 5$ с.

Вариант 16



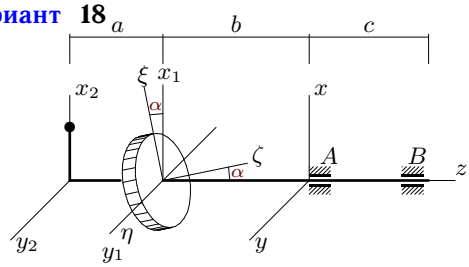
$a = 45$ см, $b = 55$ см,
$c = 50$ см, $R = 55$ см,
$m_1 = 85$ кг, $m_2 = 18$ кг,
$\alpha = 0.17$ рад, $L = 35$ см,
$M_z = 2.4$ Нм, $t = 6$ с.

Вариант 17



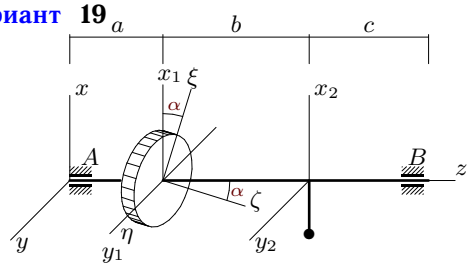
$a = 30$ см, $b = 60$ см,
$c = 45$ см, $R = 35$ см,
$m_1 = 45$ кг, $m_2 = 10$ кг,
$\alpha = 0.11$ рад, $L = 20$ см,
$M_z = 0.9$ Нм, $t = 4$ с.

Вариант 18



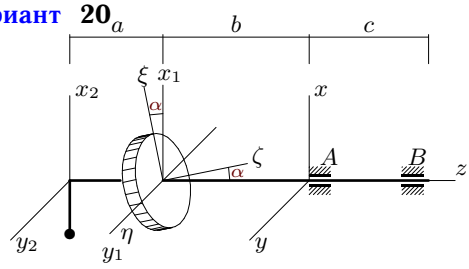
$a = 50$ см, $b = 60$ см,
$c = 55$ см, $R = 55$ см,
$m_1 = 25$ кг, $m_2 = 6$ кг,
$\alpha = 0.06$ рад, $L = 40$ см,
$M_z = 1.7$ Нм, $t = 3$ с.

Вариант 19



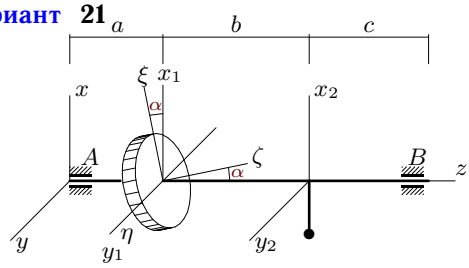
$a = 30$ см, $b = 50$ см,
$c = 40$ см, $R = 40$ см,
$m_1 = 90$ кг, $m_2 = 14$ кг,
$\alpha = 0.17$ рад, $L = 20$ см,
$M_z = 1.9$ Нм, $t = 5$ с.

Вариант 20



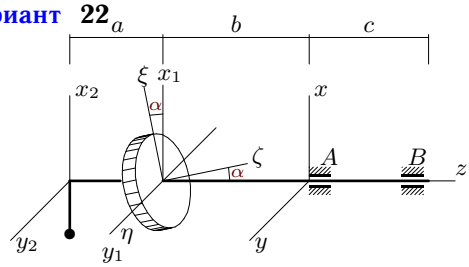
$a = 30$ см, $b = 40$ см,
$c = 35$ см, $R = 35$ см,
$m_1 = 55$ кг, $m_2 = 14$ кг,
$\alpha = 0.14$ рад, $L = 20$ см,
$M_z = 0.8$ Нм, $t = 5$ с.

Вариант 21



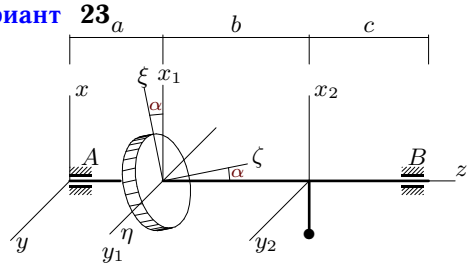
$a = 45$ см, $b = 65$ см,
$c = 55$ см, $R = 50$ см,
$m_1 = 25$ кг, $m_2 = 14$ кг,
$\alpha = 0.08$ рад, $L = 35$ см,
$M_z = 0.6$ Нм, $t = 5$ с.

Вариант 22



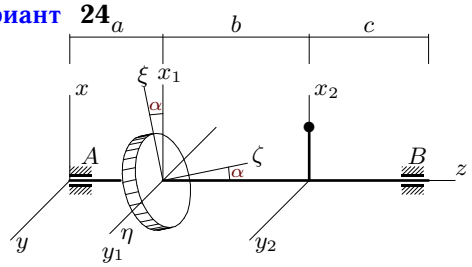
$a = 40$ см, $b = 50$ см,
$c = 45$ см, $R = 45$ см,
$m_1 = 30$ кг, $m_2 = 14$ кг,
$\alpha = 0.09$ рад, $L = 30$ см,
$M_z = 0.6$ Нм, $t = 5$ с.

Вариант 23



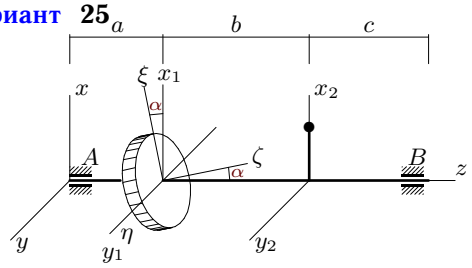
$a = 40$ см, $b = 60$ см,
$c = 50$ см, $R = 45$ см,
$m_1 = 60$ кг, $m_2 = 14$ кг,
$\alpha = 0.15$ рад, $L = 30$ см,
$M_z = 1.6$ Нм, $t = 5$ с.

Вариант 24



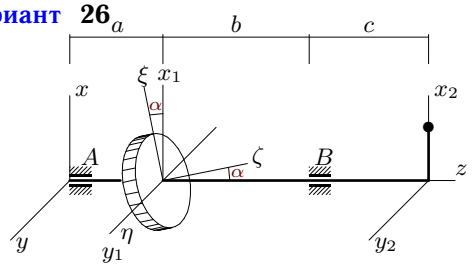
$a = 25$ см, $b = 45$ см,
$c = 35$ см, $R = 30$ см,
$m_1 = 30$ кг, $m_2 = 6$ кг,
$\alpha = 0.07$ рад, $L = 15$ см,
$M_z = 0.6$ Нм, $t = 3$ с.

Вариант 25



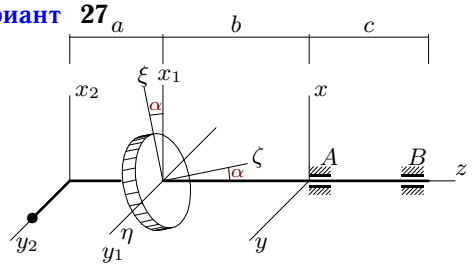
$a = 30$ см, $b = 50$ см,
$c = 40$ см, $R = 35$ см,
$m_1 = 45$ кг, $m_2 = 6$ кг,
$\alpha = 0.1$ рад, $L = 20$ см,
$M_z = 1.5$ Нм, $t = 3$ с.

Вариант 26



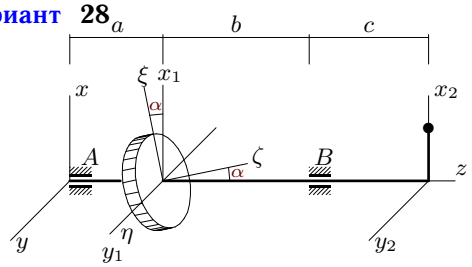
$a = 35$ см, $b = 65$ см,
$c = 50$ см, $R = 40$ см,
$m_1 = 40$ кг, $m_2 = 6$ кг,
$\alpha = 0.09$ рад, $L = 25$ см,
$M_z = 1.7$ Нм, $t = 3$ с.

Вариант 27



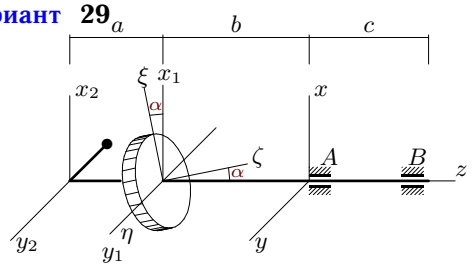
$a = 55$ см, $b = 65$ см,
$c = 60$ см, $R = 60$ см,
$m_1 = 65$ кг, $m_2 = 10$ кг,
$\alpha = 0.15$ рад, $L = 45$ см,
$M_z = 4.9$ Нм, $t = 4$ с.

Вариант 28



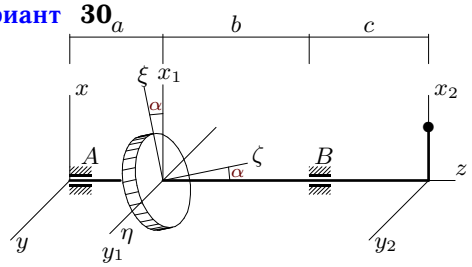
$a = 30$ см, $b = 60$ см,
$c = 45$ см, $R = 35$ см,
$m_1 = 65$ кг, $m_2 = 6$ кг,
$\alpha = 0.14$ рад, $L = 20$ см,
$M_z = 2.7$ Нм, $t = 3$ с.

Вариант 29



$a = 50$ см, $b = 60$ см,
$c = 55$ см, $R = 55$ см,
$m_1 = 30$ кг, $m_2 = 18$ кг,
$\alpha = 0.1$ рад, $L = 40$ см,
$M_z = 0.7$ Нм, $t = 6$ с.

Вариант 30



$a = 25$ см, $b = 55$ см,
$c = 40$ см, $R = 30$ см,
$m_1 = 35$ кг, $m_2 = 6$ кг,
$\alpha = 0.08$ рад, $L = 15$ см,
$M_z = 0.7$ Нм, $t = 3$ с.

Ответы

	ε	ω	x_c	y_c	z_c	X_A	Y_A	X_B	Y_B
1	0.266	1.065	0.000	5.714	60.000	-0.015	-1.591	-1.050	-2.942
2	0.222	0.889	0.000	4.286	52.143	0.128	0.604	-0.461	-1.789
3	0.222	0.889	0.000	4.286	37.857	-0.141	-0.387	-0.193	-0.798
4	0.639	1.918	1.319	0.000	-41.978	-8.237	1.432	3.824	-0.665
5	0.139	0.835	0.000	-7.397	-59.863	1.607	11.414	-0.856	-7.653
6	0.365	1.094	2.353	0.000	35.882	-0.371	0.113	-1.065	0.324
7	0.267	1.067	0.000	2.727	33.182	-0.254	-0.541	-0.146	-1.166
8	0.294	1.177	0.000	5.833	-62.500	-4.130	-14.332	3.100	9.481
9	0.177	0.884	-9.492	0.000	66.610	1.282	-0.290	3.097	-0.700
10	0.124	0.743	0.000	-11.429	-74.286	2.232	12.034	-1.340	-8.056
11	0.164	0.819	-9.074	0.000	61.852	0.984	-0.240	2.303	-0.562
12	0.165	0.993	0.000	-1.667	34.167	0.364	-0.973	-0.067	2.748
13	0.231	0.926	0.000	6.250	63.750	0.207	1.093	-0.786	-3.235
14	0.562	1.687	0.984	0.000	28.361	0.434	-0.086	-2.141	0.423
15	0.188	0.942	-7.656	0.000	74.531	-2.472	0.525	6.817	-1.448
16	0.159	0.956	0.000	-6.117	-62.864	5.010	16.929	-4.006	-11.170
17	0.285	1.141	0.000	3.636	49.091	0.066	1.349	-0.636	-3.951
18	0.359	1.076	7.742	0.000	-69.677	-8.569	2.656	5.793	-1.795
19	0.245	1.224	-2.692	0.000	36.731	2.163	-0.353	2.033	-0.332
20	0.204	1.018	-4.058	0.000	-46.087	8.009	-1.573	-5.107	1.003
21	0.124	0.620	-12.564	0.000	68.333	0.598	-0.193	1.284	-0.414
22	0.140	0.698	-9.545	0.000	-62.727	5.992	-1.717	-3.945	1.130
23	0.218	1.091	-5.676	0.000	51.351	1.304	-0.239	3.692	-0.677
24	0.404	1.212	2.500	0.000	32.500	-0.507	0.139	-0.815	0.224
25	0.501	1.502	2.353	0.000	35.882	-1.161	0.258	-1.545	0.343
26	0.476	1.427	3.261	0.000	50.000	1.233	-0.288	-4.286	1.001
27	0.357	1.428	0.000	6.000	-72.333	-7.802	-27.009	6.196	17.832
28	0.640	1.919	1.690	0.000	38.873	1.069	-0.186	-5.488	0.953
29	0.094	0.566	0.000	-15.000	-78.750	1.906	6.964	-1.227	-4.656
30	0.409	1.228	2.195	0.000	38.902	0.560	-0.152	-1.917	0.520