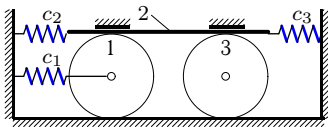


Свободные колебания системы с одной степенью свободы

Механическая система, состоящая из цилиндров, стержней и одной или нескольких пружин, совершает малые колебания. Механизм расположен в горизонтальной плоскости. Найти собственную частоту системы.

Задача D-35.1.

2

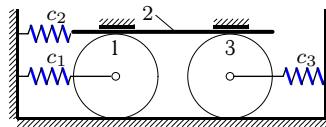


$$c_1 = 216 \text{ Н/м}, c_2 = 63 \text{ Н/м}, c_3 = 54 \text{ Н/м},$$

$$m_1 = 4 \text{ кг}, m_2 = 1 \text{ кг}, m_3 = 6 \text{ кг}.$$

Задача D-35.2.

2

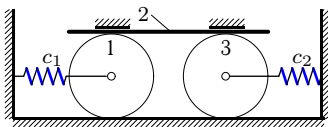


$$c_1 = 1739 \text{ Н/м}, c_2 = 447 \text{ Н/м}, c_3 = 1765 \text{ Н/м},$$

$$m_1 = 4 \text{ кг}, m_2 = 3 \text{ кг}, m_3 = 6 \text{ кг}.$$

Задача D-35.3.

2

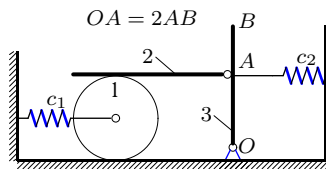


$$c_1 = 1935 \text{ Н/м}, c_2 = 969 \text{ Н/м},$$

$$m_1 = 4 \text{ кг}, m_2 = 3 \text{ кг}, m_3 = 4 \text{ кг}.$$

Задача D-35.4.

2

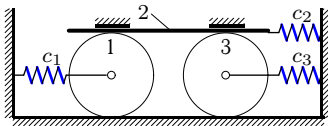


$$c_1 = 1864 \text{ Н/м}, c_2 = 209 \text{ Н/м},$$

$$m_1 = 6 \text{ кг}, m_2 = 3 \text{ кг}, m_3 = 2 \text{ кг}.$$

Задача D-35.5.

2

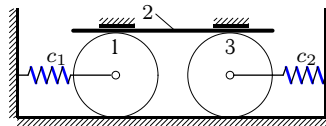


$$c_1 = 695 \text{ Н/м}, c_2 = 149 \text{ Н/м}, c_3 = 645 \text{ Н/м},$$

$$m_1 = 4 \text{ кг}, m_2 = 1 \text{ кг}, m_3 = 4 \text{ кг}.$$

Задача D-35.6.

2

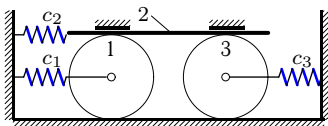


$$c_1 = 1291 \text{ Н/м}, c_2 = 645 \text{ Н/м},$$

$$m_1 = 4 \text{ кг}, m_2 = 1 \text{ кг}, m_3 = 4 \text{ кг}.$$

Задача D-35.7.

2

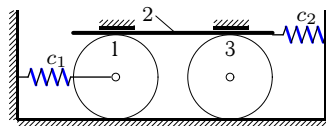


$$c_1 = 327 \text{ Н/м}, c_2 = 98 \text{ Н/м}, c_3 = 361 \text{ Н/м},$$

$$m_1 = 6 \text{ кг}, m_2 = 3 \text{ кг}, m_3 = 6 \text{ кг}.$$

Задача D-35.8.

2

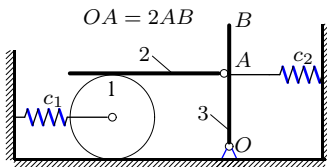


$$c_1 = 976 \text{ Н/м}, c_2 = 106 \text{ Н/м},$$

$$m_1 = 2 \text{ кг}, m_2 = 2 \text{ кг}, m_3 = 2 \text{ кг}.$$

Задача D-35.9.

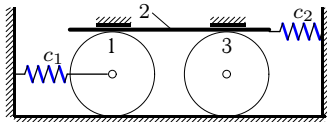
2



$c_1 = 1093 \text{ Н/м}, c_2 = 120 \text{ Н/м},$
 $m_1 = 2 \text{ кг}, m_2 = 1 \text{ кг}, m_3 = 2 \text{ кг}.$

Задача D-35.11.

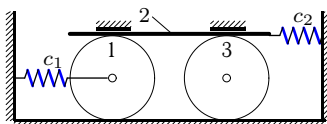
2



$c_1 = 936 \text{ Н/м}, c_2 = 102 \text{ Н/м},$
 $m_1 = 2 \text{ кг}, m_2 = 3 \text{ кг}, m_3 = 4 \text{ кг}.$

Задача D-35.13.

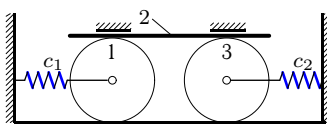
2



$c_1 = 1352 \text{ Н/м}, c_2 = 148 \text{ Н/м},$
 $m_1 = 4 \text{ кг}, m_2 = 3 \text{ кг}, m_3 = 4 \text{ кг}.$

Задача D-35.15.

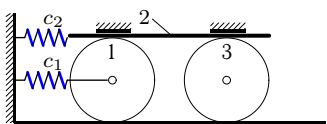
2



$c_1 = 2365 \text{ Н/м}, c_2 = 1184 \text{ Н/м},$
 $m_1 = 4 \text{ кг}, m_2 = 3 \text{ кг}, m_3 = 2 \text{ кг}.$

Задача D-35.17.

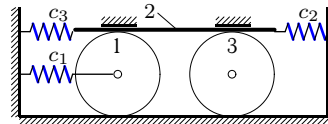
2



$c_1 = 2072 \text{ Н/м}, c_2 = 266 \text{ Н/м},$
 $m_1 = 4 \text{ кг}, m_2 = 1 \text{ кг}, m_3 = 4 \text{ кг}.$

Задача D-35.10.

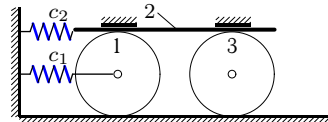
2



$c_1 = 1172 \text{ Н/м}, c_2 = 258 \text{ Н/м}, c_3 = 282 \text{ Н/м},$
 $m_1 = 2 \text{ кг}, m_2 = 2 \text{ кг}, m_3 = 4 \text{ кг}.$

Задача D-35.12.

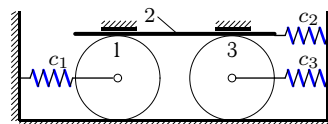
2



$c_1 = 2240 \text{ Н/м}, c_2 = 285 \text{ Н/м},$
 $m_1 = 2 \text{ кг}, m_2 = 2 \text{ кг}, m_3 = 6 \text{ кг}.$

Задача D-35.14.

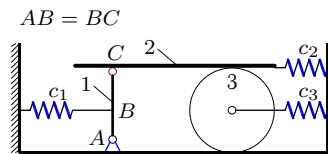
2



$c_1 = 1032 \text{ Н/м}, c_2 = 222 \text{ Н/м}, c_3 = 960 \text{ Н/м},$
 $m_1 = 4 \text{ кг}, m_2 = 2 \text{ кг}, m_3 = 4 \text{ кг}.$

Задача D-35.16.

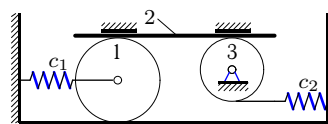
2



$c_1 = 759 \text{ Н/м}, c_2 = 161 \text{ Н/м}, c_3 = 703 \text{ Н/м},$
 $m_1 = 9 \text{ кг}, m_2 = 2 \text{ кг}, m_3 = 4 \text{ кг}.$

Задача D-35.18.

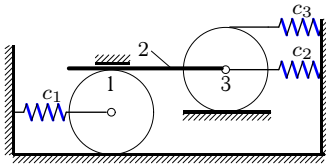
2



$c_1 = 2904 \text{ Н/м}, c_2 = 362 \text{ Н/м},$
 $m_1 = 2 \text{ кг}, m_2 = 2 \text{ кг}, m_3 = 3 \text{ кг}.$

Задача D-35.19.

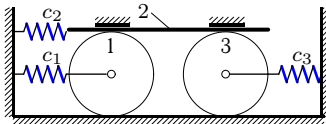
2



$c_1 = 2468 \text{ Н/м}$, $c_2 = 530 \text{ Н/м}$, $c_3 = 142 \text{ Н/м}$,
 $m_1 = 6 \text{ кг}$, $m_2 = 2 \text{ кг}$, $m_3 = 3 \text{ кг}$.

Задача D-35.21.

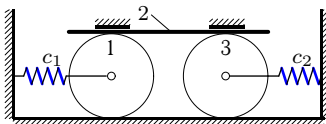
2



$c_1 = 742 \text{ Н/м}$, $c_2 = 198 \text{ Н/м}$, $c_3 = 766 \text{ Н/м}$,
 $m_1 = 6 \text{ кг}$, $m_2 = 2 \text{ кг}$, $m_3 = 4 \text{ кг}$.

Задача D-35.23.

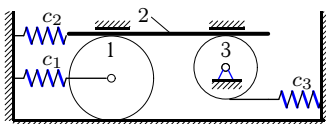
2



$c_1 = 456 \text{ Н/м}$, $c_2 = 228 \text{ Н/м}$,
 $m_1 = 4 \text{ кг}$, $m_2 = 1 \text{ кг}$, $m_3 = 6 \text{ кг}$.

Задача D-35.25.

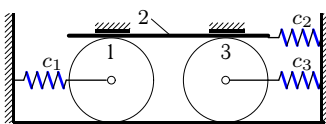
2



$c_1 = 811 \text{ Н/м}$, $c_2 = 210 \text{ Н/м}$, $c_3 = 206 \text{ Н/м}$,
 $m_1 = 2 \text{ кг}$, $m_2 = 1 \text{ кг}$, $m_3 = 2 \text{ кг}$.

Задача D-35.27.

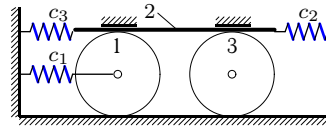
2



$c_1 = 726 \text{ Н/м}$, $c_2 = 152 \text{ Н/м}$, $c_3 = 666 \text{ Н/м}$,
 $m_1 = 4 \text{ кг}$, $m_2 = 2 \text{ кг}$, $m_3 = 4 \text{ кг}$.

Задача D-35.20.

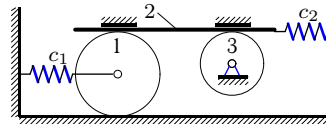
2



$c_1 = 2151 \text{ Н/м}$, $c_2 = 467 \text{ Н/м}$, $c_3 = 514 \text{ Н/м}$,
 $m_1 = 6 \text{ кг}$, $m_2 = 3 \text{ кг}$, $m_3 = 4 \text{ кг}$.

Задача D-35.22.

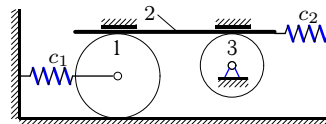
2



$c_1 = 2649 \text{ Н/м}$, $c_2 = 294 \text{ Н/м}$,
 $m_1 = 2 \text{ кг}$, $m_2 = 2 \text{ кг}$, $m_3 = 3 \text{ кг}$.

Задача D-35.24.

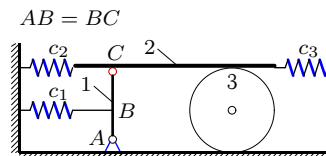
2



$c_1 = 2182 \text{ Н/м}$, $c_2 = 241 \text{ Н/м}$,
 $m_1 = 4 \text{ кг}$, $m_2 = 3 \text{ кг}$, $m_3 = 4 \text{ кг}$.

Задача D-35.26.

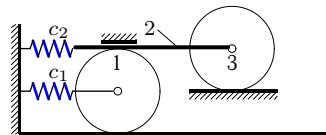
2



$c_1 = 1172 \text{ Н/м}$, $c_2 = 283 \text{ Н/м}$, $c_3 = 252 \text{ Н/м}$,
 $m_1 = 6 \text{ кг}$, $m_2 = 3 \text{ кг}$, $m_3 = 2 \text{ кг}$.

Задача D-35.28.

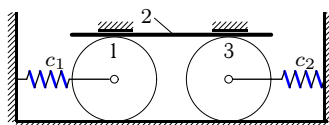
2



$c_1 = 1120 \text{ Н/м}$, $c_2 = 145 \text{ Н/м}$,
 $m_1 = 2 \text{ кг}$, $m_2 = 2 \text{ кг}$, $m_3 = 1 \text{ кг}$.

Задача D-35.29.

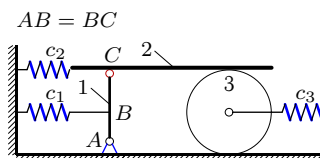
2



$c_1 = 1614 \text{ Н/м}, c_2 = 806 \text{ Н/м},$
 $m_1 = 2 \text{ кг}, m_2 = 2 \text{ кг}, m_3 = 6 \text{ кг}.$

Задача D-35.30.

2



$c_1 = 379 \text{ Н/м}, c_2 = 108 \text{ Н/м}, c_3 = 405 \text{ Н/м},$
 $m_1 = 9 \text{ кг}, m_2 = 1 \text{ кг}, m_3 = 2 \text{ кг}.$

D-35 Ответы.

Свободные колебания системы с одной степенью свободы

26.03.2013

№	a	c	ω
1	19	684	6
2	27	5292	14
3	24	2904	11
4	27	2700	10
5	16	1936	11
6	16	1936	11
7	30	1080	6
8	14	1400	10
9	13	1573	11
10	17	3332	14
11	21	1344	8
12	20	3380	13
13	24	1944	9
14	20	2880	12
15	21	3549	13
16	26	2106	9
17	16	3136	14
18	17	4352	16
19	35	6860	14
20	27	6075	15
21	23	2300	10
22	17	3825	15
23	19	684	6
24	26	3146	11
25	11	2475	15
26	23	3312	12
27	20	2000	10
28	17	1700	10
29	20	2420	11
30	19	1216	8