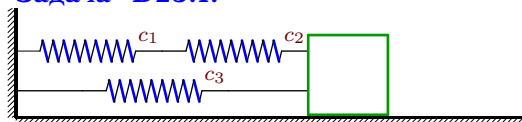


## Свободное колебание точки

Груз массой  $m$  расположен на гладкой горизонтальной плоскости и скреплен с тремя пружинами, жесткости которых заданы. Определить частоту собственных колебаний груза. Массой пружин пренебречь. В ответах дана приведенная жесткость пружин  $c_0$  и частота  $k$ .

### Задача D23.1.

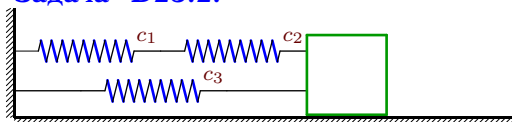
5



$$c_1 = 3 \text{ Н/м}, c_2 = 5 \text{ Н/м}, \\ c_3 = -0.5 \text{ Н/м}, m = 1 \text{ кг}.$$

### Задача D23.2.

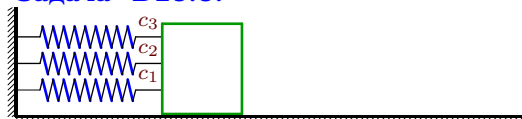
5



$$c_1 = 3 \text{ Н/м}, c_2 = 2 \text{ Н/м}, \\ c_3 = 199.4 \text{ Н/м}, m = 2 \text{ кг}.$$

### Задача D23.3.

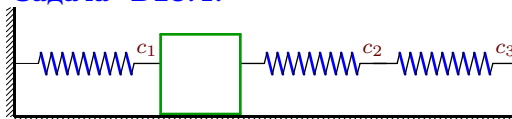
5



$$c_1 = 2 \text{ Н/м}, c_2 = 3 \text{ Н/м}, \\ c_3 = 1 \text{ Н/м}, m = 1 \text{ кг}.$$

### Задача D23.4.

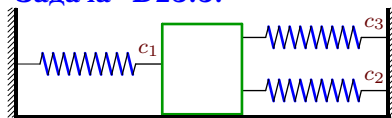
5



$$c_1 = 199 \text{ Н/м}, c_2 = 5 \text{ Н/м}, \\ c_3 = 2 \text{ Н/м}, m = 2 \text{ кг}.$$

### Задача D23.5.

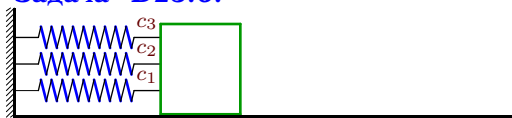
5



$$c_1 = 1 \text{ Н/м}, c_2 = 4 \text{ Н/м}, \\ c_3 = 2 \text{ Н/м}, m = 4 \text{ кг}.$$

### Задача D23.6.

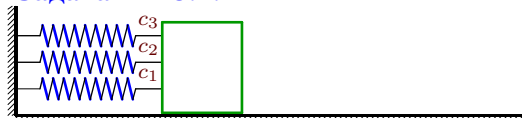
5



$$c_1 = 4 \text{ Н/м}, c_2 = 3 \text{ Н/м}, \\ c_3 = 1 \text{ Н/м}, m = 3 \text{ кг}.$$

### Задача D23.7.

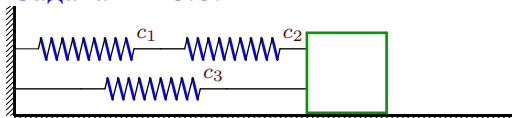
5



$$c_1 = 6 \text{ Н/м}, c_2 = 3 \text{ Н/м}, \\ c_3 = 4 \text{ Н/м}, m = 2 \text{ кг}.$$

### Задача D23.8.

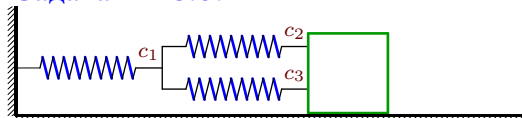
5



$$c_1 = 2 \text{ Н/м}, c_2 = 1 \text{ Н/м}, \\ c_3 = 107.8 \text{ Н/м}, m = 3 \text{ кг}.$$

### Задача D23.9.

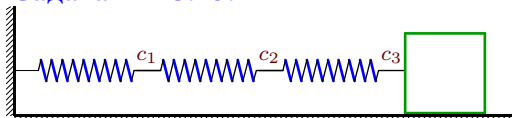
5



$$c_1 = 4 \text{ Н/м}, c_2 = 2 \text{ Н/м}, \\ c_3 = 1 \text{ Н/м}, m = 4 \text{ кг}.$$

### Задача D23.10.

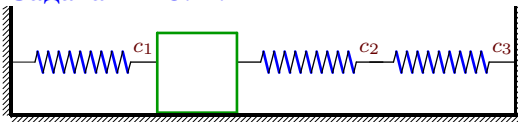
5



$$c_1 = 1 \text{ Н/м}, c_2 = 4 \text{ Н/м}, \\ c_3 = 3 \text{ Н/м}, m = 3 \text{ кг}.$$

**Задача D23.11.**

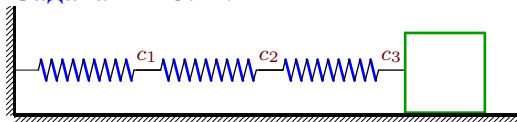
5



$c_1 = 97.8 \text{ Н/м}, c_2 = 1 \text{ Н/м},$   
 $c_3 = 2 \text{ Н/м}, m = 2 \text{ кг}.$

**Задача D23.12.**

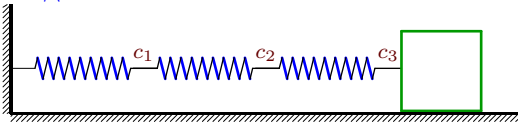
5



$c_1 = 1 \text{ Н/м}, c_2 = 4 \text{ Н/м},$   
 $c_3 = 1 \text{ Н/м}, m = 1 \text{ кг}.$

**Задача D23.13.**

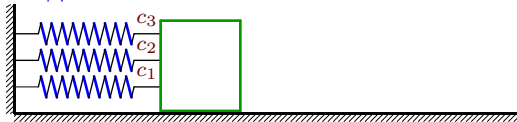
5



$c_1 = 3 \text{ Н/м}, c_2 = 1 \text{ Н/м},$   
 $c_3 = 3 \text{ Н/м}, m = 4 \text{ кг}.$

**Задача D23.14.**

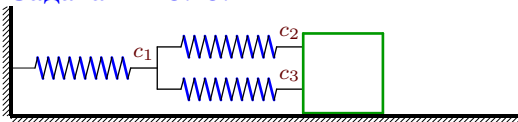
5



$c_1 = 1 \text{ Н/м}, c_2 = 4 \text{ Н/м},$   
 $c_3 = 2 \text{ Н/м}, m = 1 \text{ кг}.$

**Задача D23.15.**

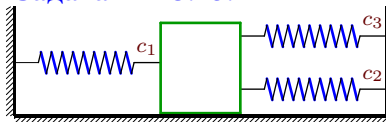
5



$c_1 = 3 \text{ Н/м}, c_2 = 1 \text{ Н/м},$   
 $c_3 = 4 \text{ Н/м}, m = 2 \text{ кг}.$

**Задача D23.16.**

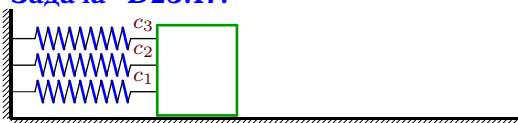
5



$c_1 = 2 \text{ Н/м}, c_2 = 3 \text{ Н/м},$   
 $c_3 = 1 \text{ Н/м}, m = 4 \text{ кг}.$

**Задача D23.17.**

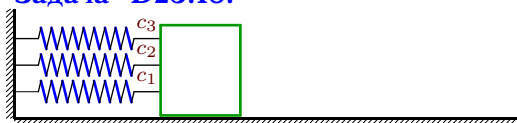
5



$c_1 = 2 \text{ Н/м}, c_2 = 1 \text{ Н/м},$   
 $c_3 = 4 \text{ Н/м}, m = 1 \text{ кг}.$

**Задача D23.18.**

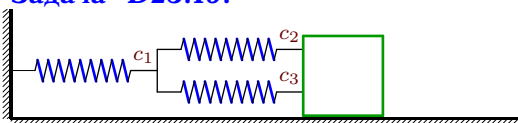
5



$c_1 = 4 \text{ Н/м}, c_2 = 3 \text{ Н/м},$   
 $c_3 = 1 \text{ Н/м}, m = 2 \text{ кг}.$

**Задача D23.19.**

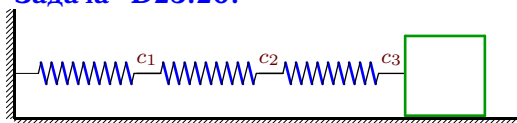
5



$c_1 = 1 \text{ Н/м}, c_2 = 3 \text{ Н/м},$   
 $c_3 = 4 \text{ Н/м}, m = 4 \text{ кг}.$

**Задача D23.20.**

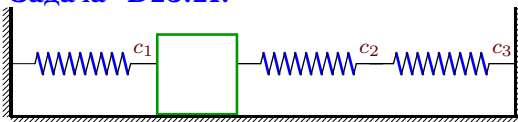
5



$c_1 = 2 \text{ Н/м}, c_2 = 3 \text{ Н/м},$   
 $c_3 = 4 \text{ Н/м}, m = 2 \text{ кг}.$

**Задача D23.21.**

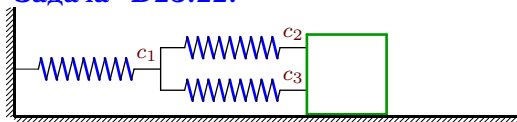
5



$c_1 = 48.8 \text{ Н/м}, c_2 = 4 \text{ Н/м},$   
 $c_3 = 3 \text{ Н/м}, m = 2 \text{ кг}.$

**Задача D23.22.**

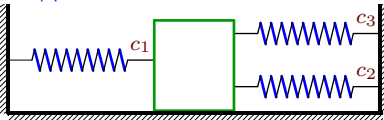
5



$c_1 = 3 \text{ Н/м}, c_2 = 5 \text{ Н/м},$   
 $c_3 = 3 \text{ Н/м}, m = 3 \text{ кг}.$

**Задача D23.23.**

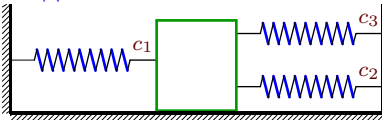
5



$c_1 = 3 \text{ Н/м}, c_2 = 2 \text{ Н/м},$   
 $c_3 = 1 \text{ Н/м}, m = 2 \text{ кг}.$

**Задача D23.24.**

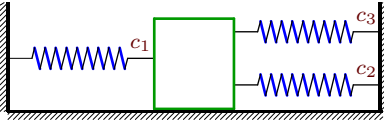
5



$c_1 = 6 \text{ Н/м}, c_2 = 1 \text{ Н/м},$   
 $c_3 = 4 \text{ Н/м}, m = 2 \text{ кг}.$

**Задача D23.25.**

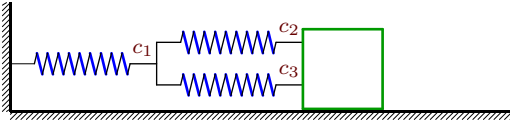
5



$c_1 = 2 \text{ Н/м}, c_2 = 4 \text{ Н/м},$   
 $c_3 = 1 \text{ Н/м}, m = 4 \text{ кг}.$

**Задача D23.26.**

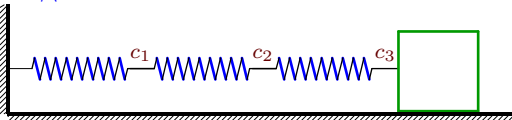
5



$c_1 = 2 \text{ Н/м}, c_2 = 1 \text{ Н/м},$   
 $c_3 = 2 \text{ Н/м}, m = 3 \text{ кг}.$

**Задача D23.27.**

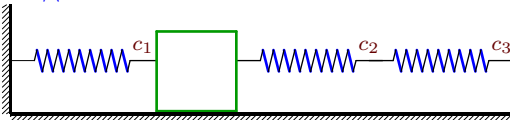
5



$c_1 = 3 \text{ Н/м}, c_2 = 4 \text{ Н/м},$   
 $c_3 = 1 \text{ Н/м}, m = 3 \text{ кг}.$

**Задача D23.28.**

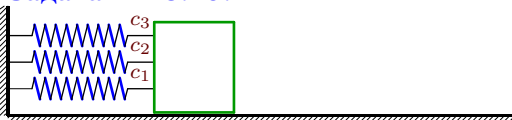
5



$c_1 = 0.8 \text{ Н/м}, c_2 = 3 \text{ Н/м},$   
 $c_3 = 4 \text{ Н/м}, m = 2 \text{ кг}.$

**Задача D23.29.**

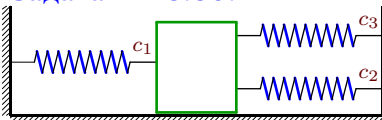
5



$c_1 = 1 \text{ Н/м}, c_2 = 3 \text{ Н/м},$   
 $c_3 = 4 \text{ Н/м}, m = 4 \text{ кг}.$

**Задача D23.30.**

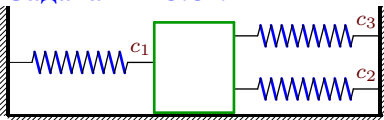
5



$c_1 = 2 \text{ Н/м}, c_2 = 4 \text{ Н/м},$   
 $c_3 = 3 \text{ Н/м}, m = 2 \text{ кг}.$

**Задача D23.31.**

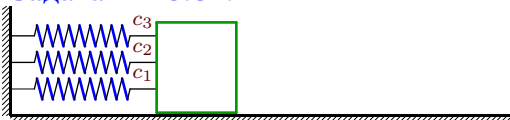
5



$c_1 = 6 \text{ Н/м}, c_2 = 1 \text{ Н/м},$   
 $c_3 = 2 \text{ Н/м}, m = 2 \text{ кг}.$

**Задача D23.32.**

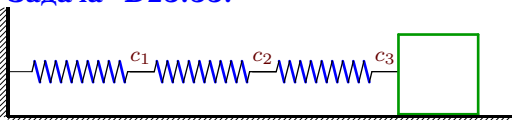
5



$c_1 = 3 \text{ Н/м}, c_2 = 5 \text{ Н/м},$   
 $c_3 = 3 \text{ Н/м}, m = 2 \text{ кг}.$

**Задача D23.33.**

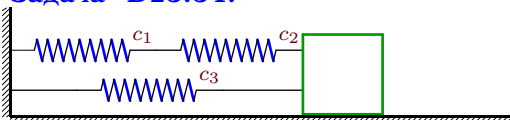
5



$c_1 = 2 \text{ Н/м}, c_2 = 3 \text{ Н/м},$   
 $c_3 = 1 \text{ Н/м}, m = 3 \text{ кг}.$

**Задача D23.34.**

5



$c_1 = 1 \text{ Н/м}, c_2 = 3 \text{ Н/м},$   
 $c_3 = 143.7 \text{ Н/м}, m = 4 \text{ кг}.$

**D23 Ответы.****Свободное колебание точки**

10.07.2012

№	$c_0$ , Н/м	$k$ , с <sup>-1</sup>
1	1.375	1.173
2	200.600	10.015
3	6.000	2.449
4	200.429	10.011
5	7.000	1.323
6	8.000	1.633
7	13.000	2.550
8	108.467	6.013
9	1.714	0.655
10	0.632	0.459
11	98.467	7.017
12	0.444	0.667
13	0.600	0.387
14	7.000	2.646
15	1.875	0.968
16	6.000	1.225
17	7.000	2.646
18	8.000	2.000
19	0.875	0.468
20	0.923	0.679
21	50.514	5.026
22	2.182	0.853
23	6.000	1.732
24	11.000	2.345
25	7.000	1.323
26	1.200	0.632
27	0.632	0.459
28	2.514	1.121
29	8.000	1.414
30	9.000	2.121
31	9.000	2.121
32	11.000	2.345
33	0.545	0.426
34	144.450	6.009

D23 файл о23d5B