

Уравнение Лагранжа. Определение ускорения

Дано выражение кинетической энергии и обобщенной силы механической системы с одной степенью свободы. В некоторый момент известны значения обобщенной координаты x и скорости \dot{x} . Найти ускорение \ddot{x} .

Задача 32.1.

$$T = \dot{x}^2(6 + 6 \sin^2 x + 3 \sin 2x)$$

$$Q = 7, x = 3, \dot{x} = 9.$$

Задача 32.2.

$$T = \dot{x}^2(8 + 4 \cos x + 2 \sin x)$$

$$Q = 4, x = 6, \dot{x} = 9.$$

Задача 32.3.

$$T = \dot{x}^2(8 + 2 \sin x + 4 \cos x)$$

$$Q = 7, x = 6, \dot{x} = 3.$$

Задача 32.4.

$$T = \dot{x}^2(7 + 10 \sin x + 3 \cos x)$$

$$Q = 9, x = 5, \dot{x} = 6.$$

Задача 32.5.

$$T = \dot{x}^2(7 + 4 \cos^2 x + 9 \sin^2 x)$$

$$Q = 8, x = 6, \dot{x} = 6.$$

Задача 32.6.

$$T = \dot{x}^2(9 + 3 \cos^2 x + 4 \sin^2 x)$$

$$Q = 9, x = 8, \dot{x} = 1.$$

Задача 32.7.

$$T = \dot{x}^2(1 + 10 \cos^2 x + 8 \sin x)$$

$$Q = 4, x = 0, \dot{x} = 7.$$

Задача 32.8.

$$T = \dot{x}^2(3 + 4 \cos^2 x + 7 \cos x)$$

$$Q = 3, x = 1, \dot{x} = 1.$$

Задача 32.9.

$$T = \dot{x}^2(3 + 2 \sin x + 3 \cos x)$$

$$Q = 4, x = 1, \dot{x} = 7.$$

Задача 32.10.

$$T = \dot{x}^2(3 + 10 \sin^2 x + 3 \sin 2x)$$

$$Q = 2, x = 0, \dot{x} = 9.$$

Задача 32.11.

$$T = \dot{x}^2(2 + 2 \cos^2 x + 6 \sin^2 x)$$

$$Q = 5, x = 1, \dot{x} = 4.$$

Задача 32.12.

$$T = \dot{x}^2(1 + 10 \sin^2 x + 7 \cos x)$$

$$Q = 9, x = -1, \dot{x} = 7.$$

Задача 32.13.

$$T = \dot{x}^2(6 + 5 \sin^2 x + 7 \cos^2 x)$$

$$Q = 5, x = 5, \dot{x} = 4.$$

Задача 32.14.

$$T = \dot{x}^2(8 + 6 \sin x + 8 \sin 2x)$$

$$Q = 7, x = 5, \dot{x} = 5.$$

Задача 32.15.

$$T = \dot{x}^2(6 + 3 \sin x + 7 \sin^2 x)$$

$$Q = 4, x = 5, \dot{x} = 5.$$

Задача 32.16.

$$T = \dot{x}^2(9 + 10 \sin x + 4 \cos^2 x)$$

$$Q = 5, x = 8, \dot{x} = 1.$$

Задача 32.17.

$$T = \dot{x}^2(2 + 9 \cos^2 x + 10 \cos x)$$

$$Q = 8, x = 0, \dot{x} = 8.$$

Задача 32.18.

$$T = \dot{x}^2(7 + 8 \sin^2 x + 6 \cos^2 x)$$

$$Q = 7, x = 6, \dot{x} = 5.$$

Задача 32.19.

$$T = \dot{x}^2(4 + 10 \sin^2 x + 7 \sin x)$$

$$Q = 2, x = 2, \dot{x} = 9.$$

Задача 32.20.

$$T = \dot{x}^2(8 + 6 \cos^2 x + 3 \cos x)$$

$$Q = 8, x = 6, \dot{x} = 4.$$

Задача 32.21.

$$T = \dot{x}^2(5 + 5 \sin^2 x + 6 \sin 2x)$$

$$Q = 6, x = 2, \dot{x} = 4.$$

Задача 32.22.

$$T = \dot{x}^2(7 + 9 \sin 2x + 9 \cos x)$$

$$Q = 4, x = 5, \dot{x} = 9.$$

Задача 32.23.

$$T = \dot{x}^2(5 + 6 \sin^2 x + 3 \sin 2x)$$

$$Q = 2, x = 2, \dot{x} = 3.$$

Задача 32.24.

$$T = \dot{x}^2(9 + 10 \sin 2x + 2 \sin x)$$

$$Q = 8, x = 7, \dot{x} = 2.$$

Задача 32.25.

$$T = \dot{x}^2(3 + 4 \sin 2x + 7 \cos^2 x)$$

$$Q = 1, x = 2, \dot{x} = 2.$$

Задача 32.26.

$$T = \dot{x}^2(1 + 7 \cos^2 x + 3 \sin 2x)$$

$$Q = 4, x = -1, \dot{x} = 3.$$

Задача 32.27.

$$T = \dot{x}^2(6 + 10 \sin x + 9 \cos^2 x)$$

$$Q = 9, x = 5, \dot{x} = 3.$$

Задача 32.28.

$$T = \dot{x}^2(1 + 3 \sin^2 x + 3 \sin x)$$

$$Q = 9, x = 0, \dot{x} = 9.$$

Задача 32.29.

$$T = \dot{x}^2(9 + 3 \sin x + 8 \cos x)$$

$$Q = 8, x = 7, \dot{x} = 8.$$

Задача 32.30.

$$T = \dot{x}^2(9 + 2 \cos x + 3 \sin^2 x)$$

$$Q = 3, x = 8, \dot{x} = 7.$$

Уравнение Лагранжа. Определение ускорения

1	-30.660
2	-10.729
3	-0.902
4	56.575
5	4.591
6	0.358
7	-17.636
8	0.788
9	5.929
10	-80.667
11	-3.893
12	6.994
13	-0.556
14	-71.254
15	4.076
16	0.140
17	0.190
18	1.286
19	22.835
20	-1.734
21	20.905
22	56.725
23	5.082
24	-0.222
25	0.306
26	-48.819
27	10.575
28	-117.000
29	5.871
30	6.109