

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.

5

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

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

Задача 32.2.

5

$$T = \dot{x}^2(4 + 5 \sin x + 4 \cos x)$$

$$Q = 4, x = 2, \dot{x} = 8.$$

Задача 32.3.

5

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

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

Задача 32.4.

5

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

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

Задача 32.5.

5

$$T = \dot{x}^2(6 + 9 \sin 2x + 5 \sin^2 x)$$

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

Задача 32.6.

5

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

$$Q = 4, x = 1, \dot{x} = 2.$$

Задача 32.7.

5

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

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

Задача 32.8.

5

$$T = \dot{x}^2(1 + 3 \cos^2 x + 9 \cos x)$$

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

Задача 32.9.

5

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

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

Задача 32.10.

5

$$T = \dot{x}^2(4 + 10 \sin x + 3 \sin 2x)$$

$$Q = 7, x = 1, \dot{x} = 8.$$

Задача 32.11.

5

$$T = \dot{x}^2(4 + 5 \sin^2 x + 9 \sin 2x)$$

$$Q = 9, x = 1, \dot{x} = 4.$$

Задача 32.12.

5

$$T = \dot{x}^2(8 + 4 \sin x + 7 \cos x)$$

$$Q = 1, x = 6, \dot{x} = 7.$$

Задача 32.13.

5

$$T = \dot{x}^2(5 + 4 \sin x + 7 \sin^2 x)$$

$$Q = 1, x = 4, \dot{x} = 8.$$

Задача 32.14.

5

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

$$Q = 5, x = -1, \dot{x} = 3.$$

Задача 32.15.

5

$$T = \dot{x}^2(1 + 9 \sin^2 x + 7 \sin x)$$

$$Q = 1, x = 0, \dot{x} = 6.$$

Задача 32.16.

5

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

$$Q = 1, x = 7, \dot{x} = 6.$$

Задача 32.17.

5

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

$$Q = 4, x = 2, \dot{x} = 5.$$

Задача 32.18.

5

$$T = \dot{x}^2(6 + 4 \sin 2x + 8 \sin x)$$

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

Задача 32.19.

5

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

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

Задача 32.20.

5

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

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

Задача 32.21.

5

$$T = \dot{x}^2(9 + 8 \sin 2x + 10 \cos x)$$

$$Q = 3, x = 7, \dot{x} = 4.$$

Задача 32.22.

5

$$T = \dot{x}^2(5 + 2 \sin^2 x + 8 \cos^2 x)$$

$$Q = 9, x = 4, \dot{x} = 7.$$

Задача 32.23.

5

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

$$Q = 1, x = 2, \dot{x} = 8.$$

Задача 32.24.

5

$$T = \dot{x}^2(1 + 5 \cos^2 x + 6 \cos x)$$

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

Задача 32.25.

5

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

$$Q = 3, x = 0, \dot{x} = 1.$$

Задача 32.26.

5

$$T = \dot{x}^2(7 + 9 \sin^2 x + 10 \sin x)$$

$$Q = 1, x = 5, \dot{x} = 2.$$

Задача 32.27.

5

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

$$Q = 7, x = 5, \dot{x} = 8.$$

Задача 32.28.

5

$$T = \dot{x}^2(4 + 6 \cos^2 x + 9 \sin 2x)$$

$$Q = 5, x = 1, \dot{x} = 9.$$

Задача 32.29.

5

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

$$Q = 8, x = 0, \dot{x} = 4.$$

Задача 32.30.

5

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

$$Q = 3, x = 1, \dot{x} = 2.$$

Уравнение Лагранжа. Определение ускорения

1	-66.753
2	26.878
3	-50.119
4	39.002
5	-78.790
6	-0.016
7	0.125
8	-61.319
9	11.519
10	-5.910
11	1.784
12	-10.403
13	-22.977
14	-1.707
15	-125.500
16	-4.675
17	-2.480
18	4.045
19	-29.290
20	-8.564
21	1.494
22	15.678
23	17.372
24	-13.113
25	-2.167
26	0.812
27	-92.584
28	37.806
29	1.333
30	-0.292