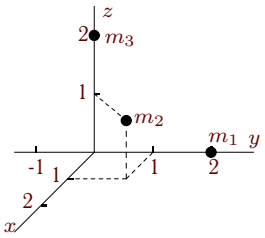
Теорема об изменении момента количества движения системы

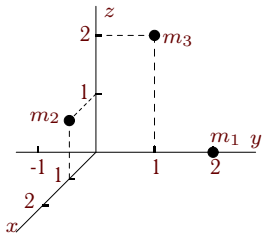
Твердое тело вращается вокруг оси z по закону $\varphi = \varphi(t)$. Даны моменты инерции тела (кгм^2) и координаты (в метрах) трех точек с массами $m_1 = 1$ кг, $m_2 = 2$ кг и $m_3 = 3$ кг. Найти момент равнодействующей сил, приложенных к телу относительно начала координат при $t = 0$.

Задача D36.1. *3*



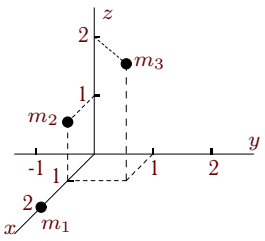
$\varphi = t^2\cos(t)$,
$J_{xz} = 6$,
$J_{yz} = 7$,
$J_z = 4$.

Задача D36.2. *3*



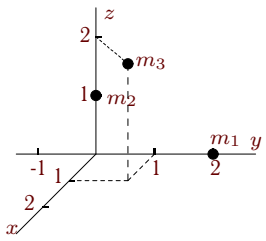
$\varphi = 2t\sin(t/2)$,
$J_{xz} = -1$,
$J_{yz} = 6$,
$J_z = 3$.

Задача D36.3. *3*



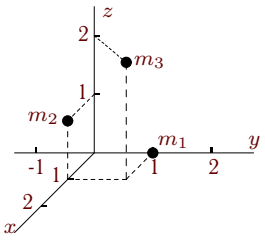
$\varphi = 5t\sin(t/2)$,
$J_{xz} = -6$,
$J_{yz} = 2$,
$J_z = 4$.

Задача D36.4. *3*



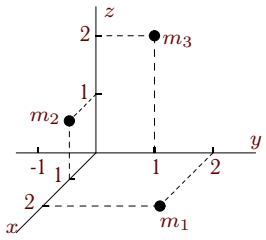
$\varphi = 2t/(1 - t/2)$,
$J_{xz} = 0$,
$J_{yz} = 6$,
$J_z = 2$.

Задача D36.5. *3*



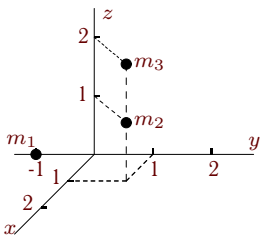
$\varphi = t/(1 - t/2)$,
$J_{xz} = -5$,
$J_{yz} = -2$,
$J_z = 3$.

Задача D36.6. *3*



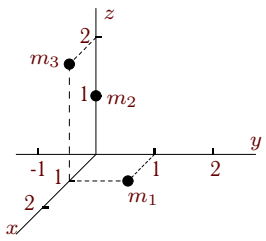
$\varphi = 3t(1 + t/2)$,
$J_{xz} = 6$,
$J_{yz} = 10$,
$J_z = 3$.

Задача D36.7. *3*



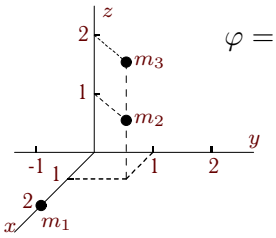
$\varphi = 3te^{2t}$,
$J_{xz} = -4$,
$J_{yz} = 12$,
$J_z = 11$.

Задача D36.8. *3*



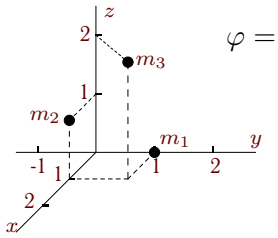
$\varphi = \ln(1 + t)$,
$J_{xz} = 2$,
$J_{yz} = 9$,
$J_z = 7$.

Задача D36.9.



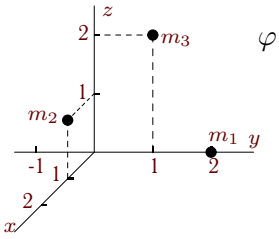
$\varphi = 3\sqrt{2t+1}/(t+1)$,
$J_{xz} = 0$,
$J_{yz} = 8$,
$J_z = 2$.

Задача D36.10.



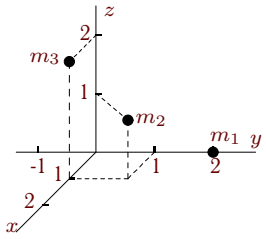
$\varphi = 3\sqrt{2t+1}/(t+1)$,
$J_{xz} = 0$,
$J_{yz} = 10$,
$J_z = 7$.

Задача D36.11.



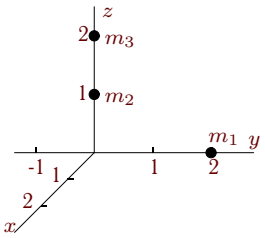
$\varphi = 3t\ln(1+t/2)$,
$J_{xz} = 6$,
$J_{yz} = 10$,
$J_z = 7$.

Задача D36.12.



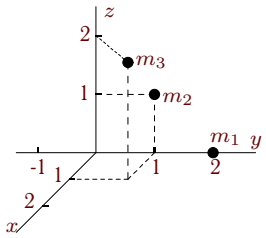
$\varphi = 4t/(1-t/2)$,
$J_{xz} = 0$,
$J_{yz} = 14$,
$J_z = 5$.

Задача D36.13.



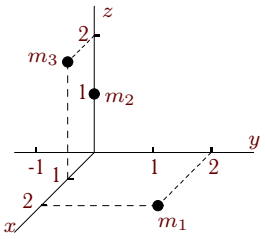
$\varphi = 5te^{t/2}$,
$J_{xz} = 1$,
$J_{yz} = 12$,
$J_z = 8$.

Задача D36.14.



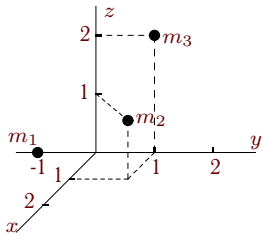
$\varphi = t\sqrt{t+1}$,
$J_{xz} = 3$,
$J_{yz} = 10$,
$J_z = 6$.

Задача D36.15.



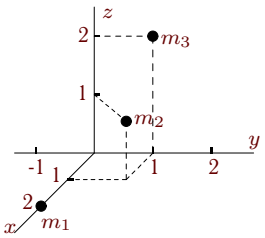
$\varphi = 5\ln(1+t)$,
$J_{xz} = 3$,
$J_{yz} = 18$,
$J_z = 7$.

Задача D36.16.



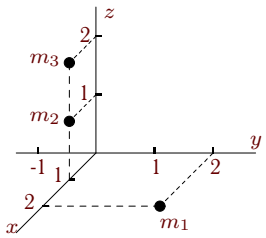
$\varphi = 2\ln(1+t)$,
$J_{xz} = 3$,
$J_{yz} = 2$,
$J_z = 2$.

Задача D36.17.



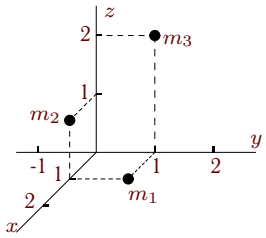
$\varphi = t\sin(t/2)$,
$J_{xz} = 6$,
$J_{yz} = 1$,
$J_z = 1$.

Задача D36.18.



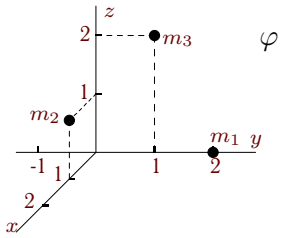
$\varphi = 3t(1+t/2)$,
$J_{xz} = -4$,
$J_{yz} = 8$,
$J_z = 6$.

Задача D36.19. 3



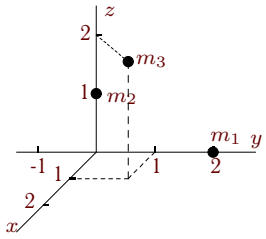
$\varphi = 5\ln(1+t)$,
$J_{xz} = 6$,
$J_{yz} = 10$,
$J_z = 9$.

Задача D36.20. 3



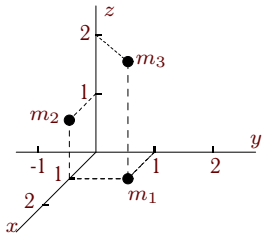
$\varphi = 2t\ln(1+t/2)$,
$J_{xz} = 10$,
$J_{yz} = 9$,
$J_z = 7$.

Задача D36.21. 3



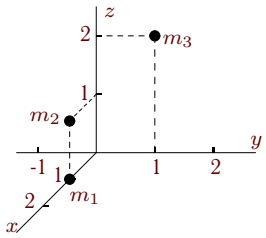
$\varphi = 3t\sqrt{t+1}$,
$J_{xz} = 3$,
$J_{yz} = 12$,
$J_z = 8$.

Задача D36.22. 3



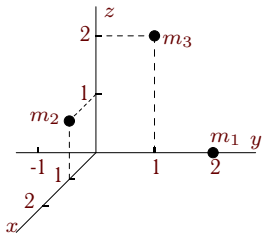
$\varphi = 4e^t/(t^2+1)$,
$J_{xz} = -6$,
$J_{yz} = 2$,
$J_z = 6$.

Задача D36.23. 3



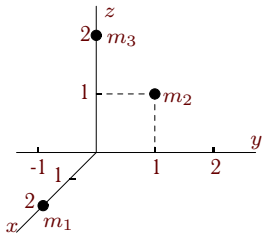
$\varphi = t^2\cos(t)$,
$J_{xz} = 12$,
$J_{yz} = 12$,
$J_z = 15$.

Задача D36.24. 3



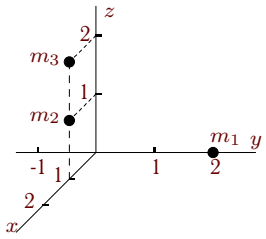
$\varphi = 3t\sin(2t)$,
$J_{xz} = 10$,
$J_{yz} = 6$,
$J_z = 5$.

Задача D36.25. 3



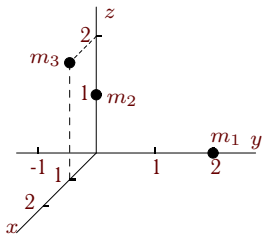
$\varphi = 2te^{t/2}$,
$J_{xz} = 4$,
$J_{yz} = 6$,
$J_z = 2$.

Задача D36.26. 3



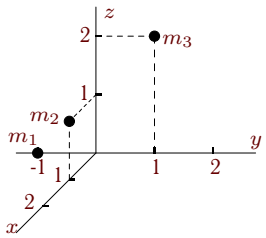
$\varphi = 5t\sin(2t)$,
$J_{xz} = -2$,
$J_{yz} = 12$,
$J_z = 3$.

Задача D36.27. 3



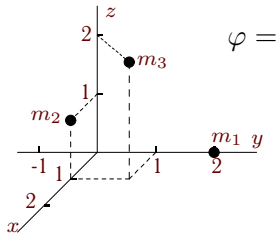
$\varphi = 5t/(1-t/2)$,
$J_{xz} = -4$,
$J_{yz} = 10$,
$J_z = 4$.

Задача D36.28. 3



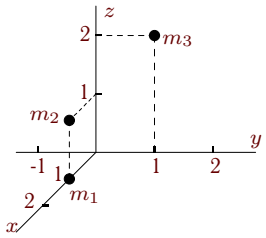
$\varphi = t^2\cos(t)$,
$J_{xz} = 6$,
$J_{yz} = 3$,
$J_z = 6$.

Задача D36.29. 3



$\varphi = 4\sqrt{2t+1}/(t+1)$,
$J_{xz} = 4$,
$J_{yz} = 6$,
$J_z = 2$.

Задача D36.30. 3



$\varphi = 2\ln(1+t)$,
$J_{xz} = 1$,
$J_{yz} = -2$,
$J_z = 6$.

D36 Ответы.
Теорема об изменении момента количества движения системы

16.09.2012

№	J_{xz}	J_{yz}	J_z	M_x	M_y	M_z	ε	M_0
1	8	9	12	−16	−18	24	2	34
2	1	12	12	−2	−24	24	2	34
3	2	8	16	−10	−40	80	5	90
4	6	12	12	−12	−24	24	2	36
5	3	4	12	−3	−4	12	1	13
6	8	16	16	−24	−48	48	3	72
7	4	20	22	−48	−240	264	12	360
8	8	9	12	8	9	−12	−1	17
9	8	16	16	24	48	−48	−3	72
10	8	16	16	24	48	−48	−3	72
11	8	16	16	−24	−48	48	3	72
12	8	16	16	−32	−64	64	4	96
13	1	12	12	−5	−60	60	5	85
14	9	18	18	−9	−18	18	1	27
15	9	18	18	45	90	−90	−5	135
16	5	10	10	10	20	−20	−2	30
17	8	9	12	−8	−9	12	1	17
18	4	8	19	−12	−24	57	3	63
19	8	16	16	40	80	−80	−5	120
20	12	15	16	−24	−30	32	2	50
21	9	18	18	−27	−54	54	3	81
22	2	8	16	8	32	−64	−4	72
23	14	18	21	−28	−36	42	2	62
24	12	12	14	−144	−144	168	12	264
25	4	8	8	−8	−16	16	2	24
26	6	12	12	−120	−240	240	20	360
27	2	10	11	−10	−50	55	5	75
28	8	9	12	−16	−18	24	2	34
29	12	12	14	48	48	−56	−4	88
30	3	4	12	6	8	−24	−2	26

D36 файл o36d3A