Кинематические инварианты

В некоторый момент времени известны скорости трех точек тела, движущегося в пространстве. Заданы координаты этих точек. Найти кинематические инварианты движения.

Задача К-29.1. [3]
$A = (1, 2, 1)$, $B = (6, -1, -1)$, $C = (1, -1, -1)$,
$\vec{v}_A = (3, 2, -3)$,
$\vec{v}_B = (23, 18, 23)$,
$\vec{v}_C = (23, -2, 3)$.

Задача К-29.2. [3]
$A = (1, 1, 1)$, $B = (7, 0, 1)$, $C = (2, 0, 1)$,
$\vec{v}_A = (6, -1, 4)$,
$\vec{v}_B = (0, -37, -35)$,
$\vec{v}_C = (0, -7, -5)$.

Задача К-29.3. [3]
$A = (2, 1, 0)$, $B = (0, 0, 2)$, $C = (1, 1, 0)$,
$\vec{v}_A = (-8, -5, -5)$,
$\vec{v}_B = (1, 13, 13)$,
$\vec{v}_C = (-8, 6, 5)$.

Задача К-29.4. [3]
$A = (2, 2, 0)$, $B = (2, 0, 1)$, $C = (0, 0, -1)$,
$\vec{v}_A = (-8, -6, -3)$,
$\vec{v}_B = (20, -9, -9)$,
$\vec{v}_C = (12, -27, -1)$.

Задача К-29.5. [3]
$A = (1, 0, 2)$, $B = (0, 0, 2)$, $C = (0, 1, 1)$,
$\vec{v}_A = (8, 6, -5)$,
$\vec{v}_B = (8, 18, -1)$,
$\vec{v}_C = (16, 15, -4)$.

Задача К-29.6. [3]
$A = (1, 0, 1)$, $B = (0, 0, 1)$, $C = (1, 2, 1)$,
$\vec{v}_A = (5, 8, 1)$,
$\vec{v}_B = (5, 19, 11)$,
$\vec{v}_C = (27, 8, -3)$.

Задача К-29.7. [3]
$A = (0, 0, 1)$, $B = (2, 1, 3)$, $C = (2, 1, 1)$,
$\vec{v}_A = (-2, -4, -3)$,
$\vec{v}_B = (-5, -18, 7)$,
$\vec{v}_C = (7, -22, 7)$.

Задача К-29.8. [3]
$A = (1, 1, 1)$, $B = (1, 2, 2)$, $C = (2, 1, 0)$,
$\vec{v}_A = (4, 8, -1)$,
$\vec{v}_B = (13, 10, -3)$,
$\vec{v}_C = (9, -8, 4)$.

Задача К-29.9. [3]
$A = (0, 1, 1)$, $B = (1, 1, 1)$, $C = (2, 3, 1)$,
$\vec{v}_A = (-3, -1, -4)$,
$\vec{v}_B = (-3, 5, -1)$,
$\vec{v}_C = (-15, 11, 6)$.

Задача К-29.10. [3]
$A = (2, 0, 0)$, $B = (1, 1, 2)$, $C = (1, 0, 0)$,
$\vec{v}_A = (-2, 6, -2)$,
$\vec{v}_B = (13, 5, 6)$,
$\vec{v}_C = (-2, 13, 2)$.

Задача К-29.11. [3]
$A = (1, 2, 2)$, $B = (1, -1, -1)$, $C = (-1, 0, 1)$,
$\vec{v}_A = (2, -4, -1)$,
$\vec{v}_B = (11, -10, 5)$,
$\vec{v}_C = (14, -24, 15)$.

Задача К-29.12. [3]
$A = (1, 0, 2)$, $B = (1, 2, 0)$, $C = (2, 3, -1)$,
$\vec{v}_A = (7, 6, 5)$,
$\vec{v}_B = (9, 10, 9)$,
$\vec{v}_C = (10, 1, 1)$.

Задача K-29.13.
$A = (1, 0, 2)$, $B = (0, 1, 2)$, $C = (0, 3, 1)$,
$\vec{v}_A = (3, -4, -4)$,
$\vec{v}_B = (9, 2, -13)$,
$\vec{v}_C = (27, -1, -19)$.

Задача K-29.14.
$A = (2, 1, 0)$, $B = (1, 1, 1)$, $C = (0, 2, 0)$,
$\vec{v}_A = (-1, 1, -2)$,
$\vec{v}_B = (1, -2, 0)$,
$\vec{v}_C = (-3, -3, 3)$.

Задача K-29.15.
$A = (1, 2, 2)$, $B = (1, 0, 1)$, $C = (1, 2, 0)$,
$\vec{v}_A = (4, 2, 5)$,
$\vec{v}_B = (16, 4, 1)$,
$\vec{v}_C = (-8, 6, 5)$.

Задача K-29.16.
$A = (1, 1, 1)$, $B = (2, 2, 0)$, $C = (1, 2, 0)$,
$\vec{v}_A = (5, -1, 3)$,
$\vec{v}_B = (-10, 10, -1)$,
$\vec{v}_C = (-10, 1, 5)$.

Задача K-29.17.
$A = (0, 1, 1)$, $B = (0, 2, -1)$, $C = (0, 1, 0)$,
$\vec{v}_A = (-8, -5, 4)$,
$\vec{v}_B = (1, -9, 2)$,
$\vec{v}_C = (2, -7, 4)$.

Задача K-29.18.
$A = (1, 1, 1)$, $B = (1, 2, 2)$, $C = (2, 1, 0)$,
$\vec{v}_A = (1, 1, -3)$,
$\vec{v}_B = (1, 2, -4)$,
$\vec{v}_C = (3, -2, -1)$.

Задача K-29.19.
$A = (1, 0, 1)$, $B = (0, 0, 3)$, $C = (2, 0, 0)$,
$\vec{v}_A = (7, 1, -3)$,
$\vec{v}_B = (15, 16, 1)$,
$\vec{v}_C = (3, -10, -7)$.

Задача K-29.20.
$A = (2, 1, 0)$, $B = (-1, 2, 1)$, $C = (1, 3, 0)$,
$\vec{v}_A = (-3, -6, 1)$,
$\vec{v}_B = (13, 22, 21)$,
$\vec{v}_C = (13, 2, 1)$.

Задача K-29.21.
$A = (2, 1, 0)$, $B = (1, 1, 1)$, $C = (1, 2, 1)$,
$\vec{v}_A = (-2, 7, 4)$,
$\vec{v}_B = (6, -5, 12)$,
$\vec{v}_C = (-2, -5, 16)$.

Задача K-29.22.
$A = (1, 0, 2)$, $B = (1, 0, 3)$, $C = (0, -1, 2)$,
$\vec{v}_A = (1, 3, -3)$,
$\vec{v}_B = (-2, 5, -3)$,
$\vec{v}_C = (-5, 9, -4)$.

Задача K-29.23.
$A = (1, 0, 2)$, $B = (1, 0, 0)$, $C = (1, 2, 1)$,
$\vec{v}_A = (5, 5, 3)$,
$\vec{v}_B = (17, -7, 3)$,
$\vec{v}_C = (25, -1, -9)$.

Задача K-29.24.
$A = (1, 0, 2)$, $B = (0, 1, 2)$, $C = (0, 0, -1)$,
$\vec{v}_A = (5, 8, -5)$,
$\vec{v}_B = (16, 19, 3)$,
$\vec{v}_C = (-25, 13, 5)$.

Задача K-29.25.
$A = (1, 2, 1)$, $B = (1, 1, 2)$, $C = (0, 0, 0)$,
$\vec{v}_A = (8, 5, 2)$,
$\vec{v}_B = (9, 7, 4)$,
$\vec{v}_C = (40, -8, -4)$.

Задача K-29.26.
$A = (2, 2, 0)$, $B = (0, 0, 0)$, $C = (0, 2, 0)$,
$\vec{v}_A = (-7, 3, 2)$,
$\vec{v}_B = (7, -11, 26)$,
$\vec{v}_C = (-7, -11, 14)$.

Задача К-29.27.
$A = (1, 0, 1)$, $B = (3, 2, 2)$, $C = (2, 2, 1)$,
$\vec{v}_A = (1, -2, 5)$,
$\vec{v}_B = (13, -19, 15)$,
$\vec{v}_C = (17, -10, 11)$.

Задача К-29.28.
$A = (2, 2, 1)$, $B = (1, 1, 1)$, $C = (1, 0, 0)$,
$\vec{v}_A = (-4, -5, -5)$,
$\vec{v}_B = (4, -13, 7)$,
$\vec{v}_C = (4, -17, 11)$.

К-29 Ответы.
Кинематические инварианты   30.10.2013

№	ω_x	ω_y	ω_z	ω	$\vec{\omega} \cdot \vec{v}_A$
1	-2	-4	4	6	-26
2	3	6	-6	9	-12
3	2	10	-11	15	-11
4	3	4	12	13	-84
5	-3	4	-12	13	60
6	-2	10	-11	15	59
7	-2	-6	-9	11	55
8	-2	-5	-14	15	-34
9	2	-3	6	7	-27
10	4	4	-7	9	30
11	-2	6	9	11	-37
12	2	10	-11	15	19
13	-3	-6	-6	9	39
14	1	2	2	3	-3
15	2	6	9	11	65
16	2	6	9	11	31
17	-2	-10	11	15	110
18	-1	-2	-2	3	3
19	-4	4	-7	9	-3
20	-4	8	-8	12	-44
21	4	8	8	12	80
22	-2	-3	-6	7	7
23	-6	-6	-7	11	-81
24	-2	10	-11	15	125
25	-2	-10	11	15	-44
26	-6	6	7	11	74
27	1	-4	-8	9	-31
28	-4	8	8	12	-64

К-29 файл   o29k3A