$(x \quad y \quad z)$ $(x \quad y \quad z)$

$M(2 \quad 13)$ $(21 \quad 3)$

θ θ ——— $-$ θ

A $l_1 : x \quad my \quad 1 \quad 0$ $l_2 : mx \quad 4y \quad 2 \quad 0$ $1u4 \quad m^2 \quad 0$

$m \quad 2$ $m \quad 2$ $m \quad 2$ $l_1 : x \quad 2y \quad 1 \quad 0$ $l_2 : 2x \quad 4y \quad 2 \quad 0$

$m \quad 2$ A

A

[illegible]

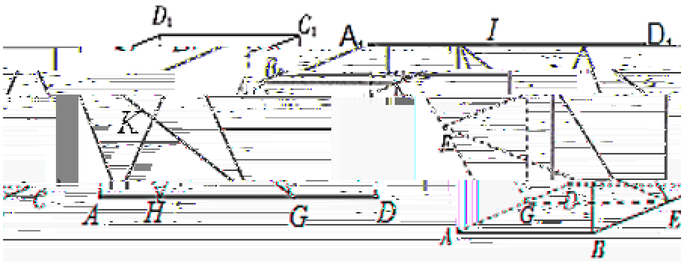
M x_1, y_1 k y $k(x$ $x_1)$ y_1 $\frac{y \quad y_1}{x \quad x_1}$ k M x_1, y_1

x 、y a b $\frac{x}{a}$ $\frac{y}{b}$ 1

b 0 y kx b y b

$l : ax$ y 1 0 AB $(\mathrm{f}$ $,$ $\frac{3}{2}] \cup [2,$ $)$

l AB $a \bullet$ $\frac{3}{}$



∵ BC $2BB_1$ 6 E BC C AA_1 3 AG 4 A_1G 5

∵ $\cos ‘ A_1GA$ $\frac{AG}{A_1G}$ $\frac{KG}{HG}$? HG A_1I $\frac{25}{8}$

F I H A_1F $\frac{25}{8}$

F K A_1F $\frac{5}{2}$

A_1F $\frac{5}{2},\frac{25}{8}$ D ACD

$\vec{a}$ $\vec{a}=\lambda\vec{b}$ λ

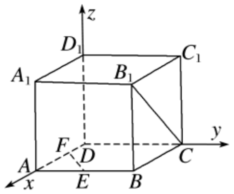
λ $\frac{1}{2x}$ $\frac{x}{8}$ $\frac{y}{5}$ 0

$l_1 A l_2$ $(a\ 1)\ 1\ 1\ 2b\ 0$ $a\ 2b\ 1$ $a\ 0, b\ 0$

$$\frac{2}{a}\ \frac{1}{b}\ \frac{2}{a}\ \frac{1}{b}(a\ 2b)\ 2\ 2\ \frac{4b}{a}\ \frac{a}{b}\ 4\ 2\sqrt{\frac{4b}{a}\ \frac{a}{b}}\ 8$$

$\frac{4b}{a}$ $\frac{a}{b}$ a $\frac{1}{2}, b$ $\frac{1}{4}$ $\frac{2}{a}$ $\frac{1}{b}$

$\sqrt{}$

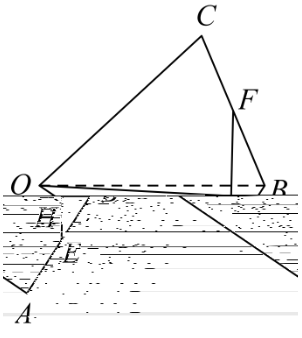


θ

$$\theta\ \frac{}{}\ \frac{2\times\ 2}{\sqrt{}\ \sqrt{\ 2}}\ \frac{}{\sqrt{}\ \sqrt{\ 2}}$$

θ θ $\frac{}{\sqrt{}\ \sqrt{-}}$ $\frac{}{\sqrt{}}$ $\sqrt{}$

$\frac{1}{3},\frac{1}{2},\frac{1}{6}$ $\frac{\sqrt{17}}{6}$ E F AB BC $\overrightarrow{OF}$ $\frac{1}{2}$ $\overrightarrow{OB}$ $\overrightarrow{OC}$



$\overrightarrow{OE}\quad \frac{1}{2}\ \overrightarrow{OA}\quad \overrightarrow{OB}$ $\quad \overrightarrow{EF}\quad \frac{1}{2}\overrightarrow{OC}\quad \frac{1}{2}\overrightarrow{OA}$ $\quad H \quad EF$ $\quad EH\quad \frac{1}{3}EF$ $\quad \overrightarrow{EH}\quad \frac{1}{6}\overrightarrow{OC}\quad \frac{1}{6}\overrightarrow{OA}$

$\overrightarrow{OH}\quad \overrightarrow{OE}\quad \overrightarrow{EH}\quad \frac{1}{3}\overrightarrow{OA}\quad \frac{1}{2}\overrightarrow{OB}\quad \frac{1}{6}\overrightarrow{OC}$ $\quad x,y,z\quad \frac{1}{3},\frac{1}{2},\frac{1}{6}$§©

$OA\,A^{o}OB\quad \overrightarrow{OA}A\,\overrightarrow{OC}$ $\quad \left|\overrightarrow{OA}\right|\quad \left|\overrightarrow{OB}\right|\quad \left|\overrightarrow{OC}\right|\quad 1$

$\overrightarrow{OA}\ \overrightarrow{OB}\tilde{}\ \ 0\quad \overrightarrow{OA}\ \overrightarrow{OC}\tilde{}\ \ 0\quad \overrightarrow{OB}\ \overrightarrow{OC}\tilde{}\ \ \frac{1}{2}$ $\quad \overrightarrow{OH}\quad \frac{1}{3}\overrightarrow{OA}\quad \frac{1}{2}\overrightarrow{OB}\quad \frac{1}{6}\overrightarrow{OC}$

$\left|\overrightarrow{OH}\right|\quad \sqrt{©\frac{1}{3}\overrightarrow{OA}\quad \frac{1}{2}\overrightarrow{OB}\quad \frac{1}{6}\overrightarrow{OC}§^{2}}\quad \sqrt{\frac{1}{9}\overrightarrow{OA}^{2}\quad \frac{1}{4}\overrightarrow{OB}^{2}\quad \frac{1}{36}\overrightarrow{OC}^{2}\quad \frac{1}{3}\overrightarrow{OA}\ \overrightarrow{OB}\tilde{}\ \ \frac{1}{9}\overrightarrow{OA}\ \overrightarrow{OC}\quad \frac{1}{6}\overrightarrow{OB}\ \overrightarrow{OC}}$

$\sqrt{\frac{1}{9}\quad \frac{1}{4}\quad \frac{1}{36}\quad \frac{1}{12}}\quad \sqrt{\frac{17}{36}}\quad \frac{\sqrt{17}}{6}$ $\quad \frac{1}{3},\frac{1}{2},\frac{1}{6}$§© $\quad \frac{\sqrt{17}}{6}$

$C(m,n)$

QAB $\quad CM$ $\quad x\quad y\quad 3\quad 0\quad AC$ $\quad BH$ $\quad x\quad 2y\quad 2\quad 0$

? $\begin{cases} m\quad n\quad 3\quad 0 \\ n\quad 2\quad \frac{1}{2}\cdot\ 1 \\ m\quad 4 \end{cases}$ $\quad \begin{cases} m\quad 3 \\ n\quad 0 \end{cases}$? $C(3,0)$

$B(a,b)$ $\quad \begin{cases} a\quad 2b\quad 2\quad 0 \\ \frac{a\quad 4}{2}\quad \frac{2\quad b}{2}\quad 3\quad 0 \end{cases}$ $\quad \begin{cases} a\quad \frac{10}{3} \\ b\quad \frac{2}{3} \end{cases}$ $\quad B\ \frac{10}{3}, \frac{2}{3}$?§©

AC $\quad 2x\quad y\quad 6\quad 0$ $\quad B$ $\quad AC$ $\quad d\quad \frac{\left|2u\frac{10}{3}\quad \frac{2}{3}\quad 6\right|}{\sqrt{2^{2}\quad 1^{2}}}\quad \frac{4\sqrt{5}}{15}$

$2x\quad 3y\quad m\quad 0$ $\quad (3,2)$ $\quad m\quad 12$

l $\quad 2x\quad 3y\quad 12\quad 0$

$y\quad kx$ $\quad (3,2)$ $\quad k\quad \frac{2}{3}$ $\quad 2x\quad 3y\quad 0$

$\frac{x}{a}\quad \frac{y}{b}\quad 1$ $\quad \frac{3}{a}\quad \frac{2}{b}\quad 1$, $a\quad 3b$ $\quad a\quad 9, b\quad 3$

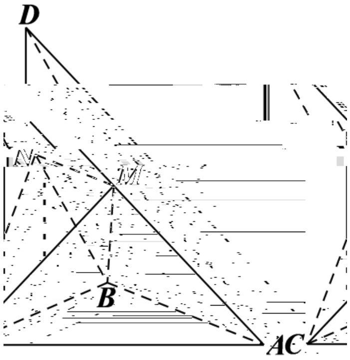
$x\quad 3y\quad 9\quad 0$ $\quad 2x\quad 3y\quad 0\quad x\quad 3y\quad 9\quad 0$

l $\quad \frac{x}{a}\quad \frac{y}{b}\quad 1\quad (3,2)$ $\quad \frac{3}{a}\quad \frac{2}{b}\quad 1\text{t}\ 2\sqrt{\frac{2}{a}\tilde{}\frac{2}{b}}$ $\quad ab\,\text{t}\ 24$

$\frac{3}{a}\quad \frac{3}{b}\quad \frac{1}{2}$ $\quad ' ABO$ $\quad 2x\quad 3y\quad 12\quad 0$

$AB \quad BC \quad \sqrt{2} \quad AC \quad 2 \qquad AB \; A \; BC \qquad AB//A_1B_1 \qquad BC \; A \; A_1B_1$

A_1



$\because BC\,A\,CD$ N BD NC $\frac{1}{2}BD$ $\frac{\sqrt{2}}{2}$

M AD MN $\frac{1}{2}AB$ $\frac{\sqrt{2}}{2}$ $MN//AB$

$\because MC$ 1 MN^2 NC^2 MC^2 MN NC

$\because AB\,A\,BD$ $MN\,A\,BD$ $\because BD \cap NC$ N MN BCD

$\because MN \bullet$ MNC $MNC\,A$ BCD

$\because MN\,A$ BCD $AB//MN$ AB BCD $\because BC \bullet$ BCD

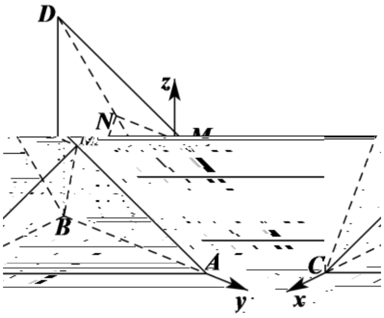
$AB\,A\,BC$

$\because AB\,A\,BD$ D BA C CBD 60°

BC $BD\cos 60^\circ$ $\frac{\sqrt{2}}{2}$ CD $BD\sin 60^\circ$ $\frac{\sqrt{6}}{2}$

B BC BA x y B $0,0,0$

C $\frac{\sqrt{2}}{2},0,0$ A $0,\sqrt{2},0$ D $\frac{\sqrt{2}}{2},0,\frac{\sqrt{6}}{2}$ M $\frac{\sqrt{2}}{4},\frac{\sqrt{2}}{2},\frac{\sqrt{6}}{4}$ N $\frac{\sqrt{2}}{4},0,\frac{\sqrt{6}}{4}$



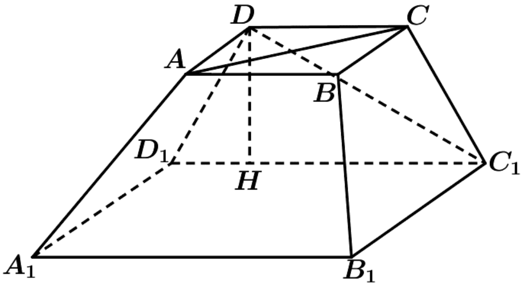
MNC $\vec{n}$ x,y,z $\overrightarrow{NM}$ $0,\frac{\sqrt{2}}{2},0$ $\overrightarrow{CN}$ $\frac{\sqrt{2}}{4},0,\frac{\sqrt{6}}{4}$

$$\begin{cases}\vec{n}\cdot\overrightarrow{NM} & \frac{\sqrt{2}}{2}y \quad 0\\ \vec{n}\cdot\overrightarrow{CN} & \frac{\sqrt{2}}{4}x \quad \frac{\sqrt{6}}{4}z \quad 0\end{cases}$$

x $\sqrt{3}$ $\vec{n}$ $\sqrt{3},0,1$

$\overrightarrow{BM}$ $\frac{\sqrt{2}}{4},\frac{\sqrt{2}}{2},\frac{\sqrt{6}}{4}$ $\cos$ $\overrightarrow{BM},\vec{n}$ $\frac{\overrightarrow{BM}\cdot\vec{n}}{\left|\overrightarrow{BM}\right|\cdot\left|\vec{n}\right|}$ $\frac{\frac{\sqrt{6}}{2}}{1\times 2}$ $\frac{\sqrt{6}}{4}$

BM MNC $\frac{\sqrt{6}}{4}$



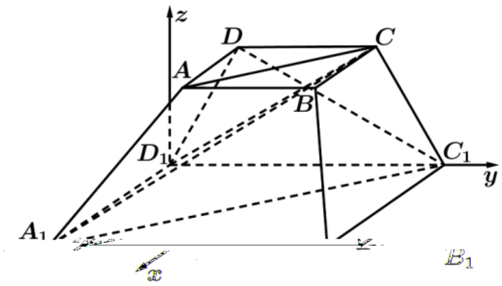
CC_1D_1D

CC_1 CD DD_1 $\frac{1}{2}C_1D_1$ 1

$DH\,A\,D_1C_1$ H D_1H $\frac{1}{2}$ $\cos$ DD_1H $\frac{1}{2}$ DD_1C_1 $\frac{\pi}{3}$

DC_1 DC_1 $\sqrt{3}$ DC_1^2 DD_1^2 $D_1C_1^2$ $DC_1\,A\,DD_1$

$AA_1D_1D\,A$ CC_1D_1D DD_1 $DC_1\,A$ AA_1D_1D



AD • AA_1D_1D $AD\ A\ DC_1$ $AD\ A\ DC$ $DC\cap DC_1$ D

$AD\ A$ CC_1D_1D

A_1C_1 $A_1D_1\ A$ CC_1D_1D

D_1

$A_1D_1\ A$ CC_1D_1D A_1C CC_1D_1D D_1C

A_1C CC_1D_1D ‘ A_1CD_1 A_1CD_1 $\frac{S}{3}$

$Rt\triangle A_1CD_1$ CD_1 $\sqrt{3}$ A_1D_1 3

D_1 $0,0,0$ A_1 $3,0,0$ D $0,\frac{1}{2},\frac{\sqrt{3}}{2}$ C $0,\frac{3}{2},\frac{\sqrt{3}}{2}$ C_1 $0,2,0$

$\overrightarrow{D_1D}$ $0,\frac{1}{2},\frac{\sqrt{3}}{2}$ $\overrightarrow{D_1A_1}$ $3,0,0$ $\overrightarrow{A_1C_1}$ $3,2,0$ $\overrightarrow{A_1C}$ $3,\frac{3}{2},\frac{\sqrt{3}}{2}$

AA_1D_1D $\vec{m}$ x,y,z $\begin{cases}\vec{m}\ \overrightarrow{D_1D}\ \ 0\\ \vec{m}\ \overrightarrow{D_1A_1}\ \ 0\end{cases}$ $\begin{cases}\frac{1}{2}y\ \ \frac{\sqrt{3}}{2}z\ \ 0\\ 3x\ \ 0\end{cases}$

y 3 x 0 z $\sqrt{3}$ $\vec{m}$ $0,3,\ \sqrt{3}$

AA_1C_1C $\vec{n}$ a,b,c $\begin{cases}\vec{n}\ \overrightarrow{A_1C_1}\ \ 0\\ \vec{n}\ \overrightarrow{A_1C}\ \ 0\end{cases}$ $\begin{cases}3a\ \ 2b\ \ 0\\ 3a\ \ \frac{3}{2}b\ \ \frac{\sqrt{3}}{2}c\ \ 0\end{cases}$

a 2 b 3 c $\sqrt{3}$ $\vec{n}$ $2,3,\sqrt{3}$ $\left|\cos\langle\vec{m},\vec{n}\rangle\right|$ $\frac{|\vec{m}\cdot\vec{n}|}{|\vec{m}||\vec{n}|}$ $\frac{6}{2\sqrt{3}\times 4}$ $\frac{\sqrt{3}}{4}$

C AA_1 D C AA_1 D $\frac{\sqrt{3}}{4}$