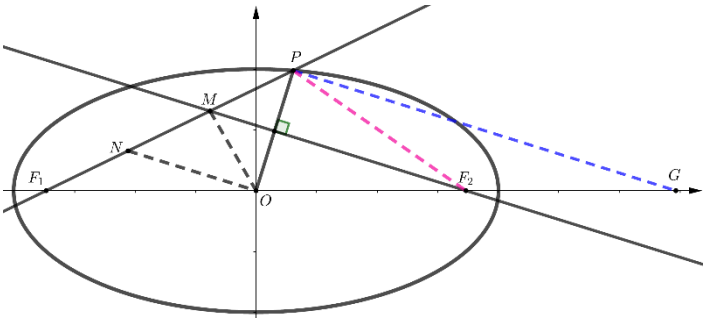
$|F_2P| = c$

$a-c$ c a

e $\frac{1}{2}$



$\frac{|F_1O|}{|F_1G|} = \frac{|F_1N|}{|F_1P|}$ ON PG

ON OP

OPN M $MN = MO$ OMN

$$|OP|^2 + |OF_1|^2 = \frac{1}{2}\left(|PF_1|^2 + |PF_2|^2\right)$$

$|PF_2| = c$ $|PF_1| = 2a - c$ $|OP|^2 = \frac{1}{2}\left(c^2 + (2a-c)^2\right) - c^2 = 2a^2 - 2ac$

$\overrightarrow{PF_1}\ \overrightarrow{PF_2} = |OP|^2 - |OF_1|^2 = 2a^2 - 2ac - c^2$

$2a$ h $\frac{a}{6} = \frac{6-h}{6}$

$a + h = 6$ x, y $x^2 + y^2 = 4a^2$

$V = xyh$ $\frac{x^2+y^2}{2}$ $h = 2a^2h = a\ \ a\ \ 2h$ $\frac{a+a+2h}{3}^3 = 64$

$4\sqrt{2}, 4\sqrt{2}, 2$

r h $r + h = 6$ $V = \pi r^2 h = \frac{\pi}{2}\left(r\ \ r\ \ 2h\right)$ $\frac{\pi}{2}\ \frac{r+r+2h}{3}^3 = 32\pi$

$\pi : 2$

$\frac{a_n + n}{2a_n + n + 1 + n - 1} = \frac{a_n + n}{2a_n + 2n} = \frac{1}{2}$

$a_1 + 1 = 2$ $a_n + n$ 2 $\frac{1}{2}$

$a_n + n = 2\ \ \frac{1}{2}^{n-1}$ $a_n = 2^{2-n} - n$

$S_n = \left(2^1 - 1\right) + \left(2^0 - 2\right) + \ldots + \left(2^{2-n} - n\right) = 2 + 1 + \frac{1}{2} + \ldots + 2^{2-n} - (1 + 2 + 3 + \ldots + n)$

$S_n = \frac{2\ 1 - \frac{1}{2}^n}{1 - \frac{1}{2}} - \frac{n(n+1)}{2}$

$S_n = 4 - \frac{4}{2^n} - \frac{n(n+1)}{2} = 4 - \frac{4}{2^n} - \frac{n^2}{2} - \frac{n}{2}$

$b^2 + c^2 - a^2 = 2bc\cos A$

$2b^2 = bc\cos A(1-\tan A)$

$\tan A = \dfrac{\sin A}{\cos A}$ $b = c(\cos A - \sin A)$

$\sin B = \sin C(\cos A - \sin A)$

ABC $\sin B = \sin(A+C)$

$\sin(A+C) = \sin C(\cos A - \sin A)$ $\sin A\cos C = -\sin C\sin A$

• ‹ # P r $\cos C = -\sin C$ $\tan C = -1$ $0 \quad C \quad \pi$ $C = \dfrac{3\pi}{4}$

2 $S_{ABC} = \dfrac{1}{2}ab\sin C$ 7

$ab = 8\sqrt{2}$ 8

$c^2 = a^2 + b^2 - 2ab\cos C$ 9

$a^2 + b^2 + \sqrt{2}ab = 40$ · 10

$a^2 + b^2 - 2ab = 24 - 16\sqrt{2} = (4-2\sqrt{2})^2$

$A \quad B$ $a \quad b$ $b - a = 4 - 2\sqrt{2}$ 11

$a + b = 4 + 2\sqrt{2}$, $a = 2\sqrt{2}$

$\cos B = \dfrac{2\sqrt{5}}{5}$ ( ) $\sin B = \dfrac{\sqrt{5}}{5}$ 7

$\dfrac{c}{\sin C} = \dfrac{b}{\sin B}$ $b = 4$ 8

$\sin(B+C) = \sin B\cos C + \cos B\sin C = \dfrac{1}{\sqrt{10}}$ 9

10

12

$\cos B = \dfrac{2\sqrt{5}}{5}$ ( ) $\sin B = \dfrac{\sqrt{5}}{5}$ 7

$\dfrac{c}{\sin C} = \dfrac{b}{\sin B}$ $b = 4$ 8

$b^2 = a^2 + c^2 - 2ac\cos B$ 9

$a = 6\sqrt{2}$ 10

$a = 6\sqrt{2}$ 11

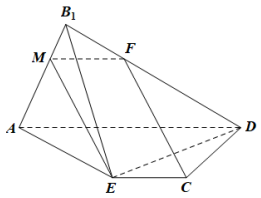
(1.00,1.2 0.25 0.2

$\bar{x}$ = 0.3 0.2+ 0.5 0.3 0.7 0.8 0.9 0.15 1.1 0

	9	1
	91	99

2 2 $K^2 = \frac{200(9 \quad 99 - 1 \quad 91)^2}{100 \quad 100 \quad 10 \quad 190}$ 6.74

6.74 6.635



$ABCD$

$AD = 3, EC = 1$

B_1A M $AM = 2MB_1$

$DF = 2FB_1$ $\frac{B_1M}{MA} = \frac{B_1F}{FD}$

FM AD $EC \parallel AD$ EC FM

$FM = \frac{1}{3}AD = 1$ $EC = FM$

$FMEC$ CF EM

CF B_1AE EM B_1AE

$CF \parallel$ B_1AE

B_1 $AECD$ h $V_{B_1-AED} = \frac{1}{3} S_{AED} h$ $S_{AED} = 3$

$V_{B_1-AED} = h$ $B_1 - AED$ h

AE O B_1O B_1O AE h $B_1O = \sqrt{2}$

$B_1AE \cap AECD = AE$ B_1O AE B_1O B_1AE

B_1AE $AECD$ B_1O $AECD$ $h = B_1O$

B_1AE $AECD$ V_{B_1-AED}

$h = \sqrt{2}$

D $\overrightarrow{DA}$ $\overrightarrow{DC}$ $D - xyz$

$D(0,0,0)$ $E(1,2,0)$ $B_1(2,1,\sqrt{2})$

$\overrightarrow{DB_1}=(2,1,\sqrt{2})$ $\overrightarrow{DE}=(1,2,0)$

$\boldsymbol{n}=(x,y,z)$ B_1ED

$$\begin{cases}\boldsymbol{n}\cdot\overrightarrow{DB_1}=0,\\ \boldsymbol{n}\cdot\overrightarrow{DE}=0,\end{cases}$$

$$\begin{cases}2x+y+\sqrt{2}z=0,\\ x+2y=0,\end{cases}$$ $y=1$ $\boldsymbol{n}=\left(-2,1,\frac{3}{\sqrt{2}}\right)$

CDE $\boldsymbol{m}=(0,0,1)$

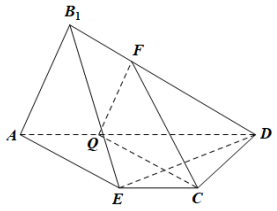
$$\cos\langle\boldsymbol{m},\boldsymbol{n}\rangle=\frac{\boldsymbol{m}\cdot\boldsymbol{n}}{|\boldsymbol{m}|\,|\boldsymbol{n}|}=\frac{\frac{3}{\sqrt{2}}}{\sqrt{4+1+\frac{9}{2}}}=\frac{3\sqrt{19}}{19}$$

.

B_1-DE-C $\frac{3\sqrt{19}}{19}$

AD Q $DQ=\frac{2}{3}DA$

$DF=2FB_1$ $\frac{DQ}{DA}=\frac{DF}{DB_1}$



$FQ\parallel B_1A$

FQ B_1AE B_1A B_1AE $FQ\parallel$ B_1AE

$ABCD$ $AD=BC$ $BE=2EC$ $EC=\frac{1}{3}BC=\frac{1}{3}AD=AQ$

$AQ\parallel EC$ $QAEC$ $QC\parallel AE$

CQ B_1AE AE B_1AE $CQ\parallel$ B_1AE

$CQ\cap FQ=Q$ $QCF\parallel$ B_1AE

CF QCF $CF\parallel$ B_1AE

B_1 $AECD$ h $V_{B_1-AED}=\frac{1}{3}S_{AED}h$ $S_{AED}=3$

$V_{B_1-AED}=h$ B_1-AED

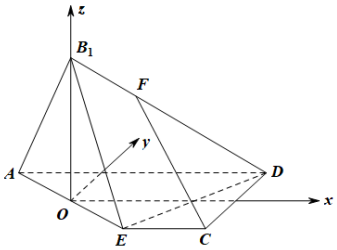
h

AE O B_1O B_1O AE h $B_1O=\sqrt{2}$

$B_1AE\cap AECD=AE$ B_1O AE B_1O B_1AE

B_1AE $AECD$ B_1O $AECD$ $h=B_1O$

B_1AE $AECD$ V_{B_1-AED}



$h=\sqrt{2}$

O $\overrightarrow{EC}$ $\overrightarrow{CD}$ $O-xyz$

$B_1(0,0,\sqrt{2})$ $D(2,1,0)$ $E(1,-1,0)$

$\overrightarrow{EB_1}=(-1,1,\sqrt{2})$ $\overrightarrow{ED}=(1,2,0)$

$\boldsymbol{n}=(x,y,z)$ B_1ED

$$\begin{cases}\boldsymbol{n}\cdot\overrightarrow{EB_1}=0,\\ \boldsymbol{n}\cdot\overrightarrow{ED}=0,\end{cases}$$

$-x+y+\sqrt{2}z=0,$ $y=-1$ $\boldsymbol{n}=\left(2,-1,\frac{3}{\sqrt{2}}\right)$

$x+2y=0,$

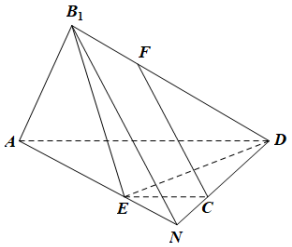
CDE $\boldsymbol{m}=(0,0,1)$

$\cos\langle \boldsymbol{m},\boldsymbol{n}\rangle=\frac{\boldsymbol{m}\cdot\boldsymbol{n}}{|\boldsymbol{m}|\,|\boldsymbol{n}|}=\frac{\frac{3}{\sqrt{2}}}{\sqrt{4+1+\frac{9}{2}}}=\frac{3\sqrt{19}}{19}$.

B_1-DE-C $\frac{3\sqrt{19}}{19}$

N $BE=2EC$ $\frac{DC}{DN}=\frac{2}{3}$

$DF=2FB_1$ $\frac{DC}{DN}=\frac{DF}{DB_1}$ $CF\ /\!/\ B_1N$



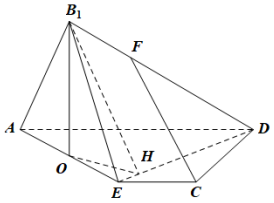
CF B_1AE B_1N B_1AE

$CF\ /\!/$ B_1AE

B_1 $AECD$ h $V_{B_1-AED}=\frac{1}{3}S_{AED}\cdot h$

$S_{AED}=3$ $V_{B_1-AED}=h$ B_1-AED

h



AE O B_1O B_1O AE h $B_1O=\sqrt{2}$

$B_1AE\cap AECD=AE$ B_1O AE B_1O B_1AE

B_1AE $AECD$ B_1O $AECD$ $h=B_1O$

B_1AE $AECD$ V_{B_1-AED}

$h=\sqrt{2}$

O OH DE H B_1H

B_1O $AECD$ B_1O DE

OH DE $B_1O\cap OH=O$ DE B_1OH

B_1H DE B_1HO $A-DE-B_1$

B_1HO B_1-DE-C

A DE d $S_{AED}=\frac{1}{2}DE\cdot d=\frac{1}{2}AD\cdot DC=3$

$DE=\sqrt{2^2+1^2}=\sqrt{5}$ $d=\frac{6}{\sqrt{5}}$ $OH=\frac{d}{2}=\frac{3}{\sqrt{5}}$

B_1OH $B_1O=\sqrt{2}$ $OH=\frac{3}{\sqrt{5}}$ $B_1OH=90^\circ$

$B_1H^2=B_1O^2+OH^2=\frac{19}{5}$ $\cos\ B_1HO=\frac{OH}{B_1H}=\frac{3\sqrt{19}}{19}$

B_1-DE-C $\frac{3\sqrt{19}}{19}$

$A(x_1,y_1)$ $F\ \frac{p}{2},0$ $|AF|=x_1+\frac{p}{2}$ 1

$C:y^2=2px(p\quad 0)$ $x_0\quad 0$ 2

$|AF|$ $\frac{p}{2}$ A $|AF|$ 1 3

$-\sqrt{\frac{2-a}{a}},-1$　　$-1,\sqrt{\frac{2-a}{a}}$　　……　　……

1　a　2　　$g(x)$　　$-\frac{1}{a},+$　　$g'(x)=0$　　$x=\sqrt{\frac{2-a}{a}}$

$g(x)$　　$-\frac{1}{a},-\sqrt{\frac{2-a}{a}}$　　$\sqrt{\frac{2-a}{a}},+$　　$-\sqrt{\frac{2-a}{a}},\sqrt{\frac{2-a}{a}}$　…

0　a　1　1　a　2

$g(x)$　　$x_1=-\sqrt{\frac{2-a}{a}},x_2=\sqrt{\frac{2-a}{a}}$

$g(x_1)+g(x_2)=\ln(ax_1+1)+\ln(ax_1+1)+\frac{2}{x_1+1}+\frac{2}{x_2+1}$

$=\ln\ a^2x_1x_2+a(x_1+x_2)+1+\frac{2(x_1+x_2)+4}{x_1x_2+(x_1+x_2)+1}$

$x_1+x_2=0,x_1x_2=\frac{a-2}{a}$

$g(x_1)+g(x_2)=\ln(a^2-2a+1)+\frac{2a}{a-1}=\ln(a-1)^2+\frac{2a}{a-1}$　…

0　a　1　　$(a-1)^2$　$(0,1)$　　$\ln(a-1)^2$　0　　$\frac{2a}{a-1}$　0

$g(x_1)+g(x_2)=\ln(a-1)^2+\frac{2a}{a-1}$　0　　……　.

1　a　2　　$t=a-1$　$(0,1)$　$\ln(a-1)^2+\frac{2a}{a-1}=2\ln t+2+\frac{2}{t}$

$G(t)=2\ln t+2+\frac{2}{t}$　$G'(t)=\frac{2}{t}-\frac{2}{t^2}=\frac{2(t-1)}{t^2}$

$G(t)$　t　$(0,1)$　……　　……　　……

$G\left(\frac{1}{e}\right)=2e$　　$g(x_1)+g(x_2)$　$2e$　　0　t　$\frac{1}{e}$　　a　$1,\frac{e+1}{e}$