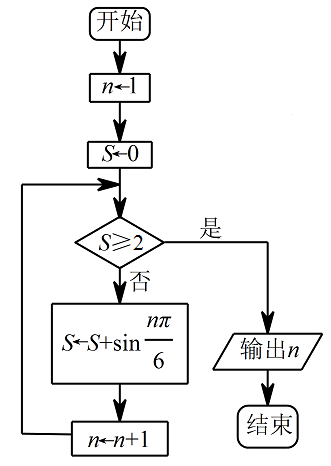
**仪征中学2018届高考考前数学保温练2**

班级 姓名 学号 评价 。

一、填空题：

1. 若复数*z*＝1－i，则*z*＋ 的虚部是 。

2. 小明随机播放*A*，*B*，*C*，*D*，*E* 五首歌曲中的两首，则*A*，*B* 两首歌曲至少有一首被播放的概率

 是 ．

3. 如图是一个算法的流程图，则输出的*n*的值是 ．



（第6题图）

（第7题）

4. 如图，直三棱柱*ABC*－*A*1*B*1*C*1的各条棱长均为2，*D*为棱*B*1*C*1上任意一点，则三棱锥*D*－*A*1*BC*

的体积是 ．

5. 已知双曲线*­*－＝1(*a*＞0，*b*＞0)的一条渐近线方程是*y*＝2*x*，它的一个焦点与抛物线*y*2＝20*x*

的焦点相同，则双曲线的方程是 ．

6. 若直线*y*＝2*x*＋*b*是曲线*y*＝e*x*－2的切线，则实数*b*＝ ．

7. 在数列{*an*}中，若*a*4＝1，*a*12＝5，且任意连续三项的和都是15，则*a*2018＝ ．

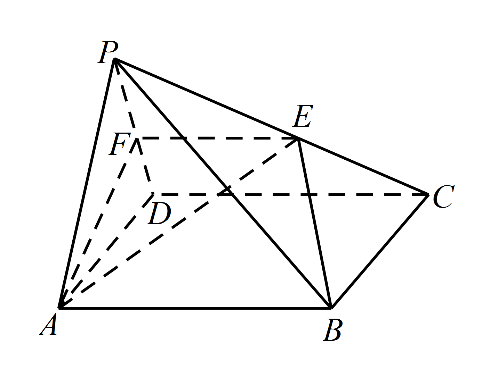
8. 已知直线*x*－*y*＋*b*＝0与圆*x*＋*y*＝9交于不同的两点*A*，*B*．*O*是坐标原点，且**|**＋**|**≥

**||**，则实数*b*的取值范围是 ．

9. 在△*ABC*中，已知·＋2·＝3·，则cos*C*的最小值是 ．

10. 已知函数*f*(*x*)＝*x*3－3*x*2＋1，*g*(*x*)＝若方程*g*[*f*(*x*)]－*a*＝0（*a*＞0）有6个实 数根（互不相同），则实数*a*的取值范围是 ．

二、解答题：

1、如图，在四棱锥*P*－*ABCD*中，底面*ABCD*是矩形，点*E*在棱*PC*上（异于点*P*，*C*），

平面*ABE*与棱*PD*交于点*F*．

（1）求证：*AB*//*EF*；

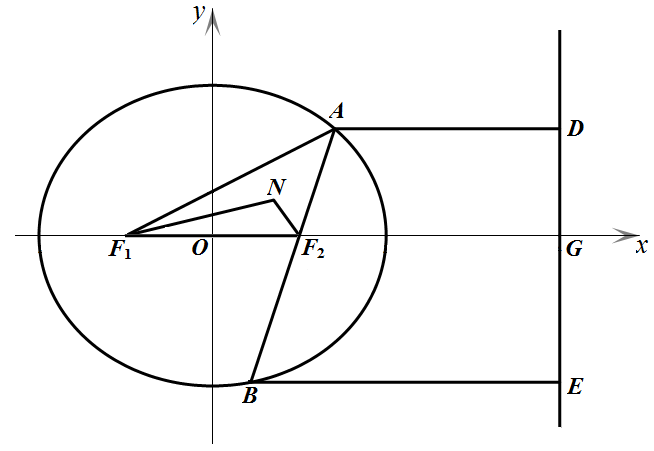
（2）若*AF*⊥*EF*，求证：平面*PAD*⊥平面*ABCD*．

2、如图，已知椭圆*C*：*­*＋＝1(*a*＞*b*＞0)的左、右焦点分别为*F*1、*F*2，若椭圆*C*经过点(0，)，

离心率为，直线*l*过点*F*2与椭圆*C*交于*A*、*B*两点．

（1）求椭圆*C*的方程；

（2）若点*N*为△*F*1*AF*2的内心（三角形三条内角平分线的交点），求△*F*1*NF*2与△*F*1*AF*2面积的

 比值；

（3）设点*A*，*F*2，*B*在直线*x*＝4上的射影依次为

点*D*，*G*， *E*．连结*AE*，*BD*，试问当直线*l*

的倾斜角变化时，直线*AE*与*BD*是否相交于

定点*T*？若是，请求出定点*T*的坐标；若不是，

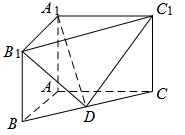
请说明理由．

三、附加题：

1、在极坐标系中，已知圆*C*：*ρ*＝2cos*θ*和直线*l*：*θ*＝(*ρ*∈**R**)相交于*A*，*B*两点，求线段*AB*的长．

2、直三棱柱https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24ABC-A_1B_1C_1%24%24%25中，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24AB%5Cperp+AC%24%24%25，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24AB%3D2%24%24%25，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24AC%3D4%24%24%25，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24AA_1%3D2%24%24%25，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Coverrightarrow+%7BBD%5Cmathstrut%7D%3D%5Clambda%5Coverrightarrow+%7BDC%5Cmathstrut%7D%24%24%25．

（1）若https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Clambda%24%24%25https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%3D1%24%24%25，求直线https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24DB_1%24%24%25与平面https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24A_1C_1D%24%24%25所成角的正弦值；

（2）若二面角https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24B_1-A_1C_1-D%24%24%25的大小为https://gallery.fbcontent.cn/latex?decode=false&latex=%24%2460%5Cdegree%24%24%25，求实数https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Clambda%24%24%25的值。

答案

**一、填空题：**

1．－； 2．； 3．4； 4．； 5．； 6．－2ln2； 7．9；8．； 9． ； 10．

**二、解答题：**

**1、**证明：（1） 因为四边形*ABCD*是矩形，

所以*AB*//*CD*． ………2分

又*AB*⊄平面*PDC*，*CD*⊂平面*PDC*，

所以*AB*//平面*PDC*， ………4分

又因为*AB*⊂平面*ABE*，平面*ABE*∩平面*PDC*＝*EF*，

所以*AB*//*EF*． ………7分

     （2） 因为四边形*ABCD*是矩形，

所以*AB*⊥*AD*． ………8分

因为*AF*⊥*EF*，（1）中已证*AB*//*EF*，

所以*AB*⊥*AF*， ………9分

又*AB*⊥*AD*，

由点*E*在棱*PC*上（异于点*C*），所以*F*点异于点*D*，

所以*AF*∩*AD*＝*A*，

*AF*，*AD*⊂平面*PAD*，

所以*AB*⊥平面*PAD*， ………12分

又*AB*⊂平面*ABCD*，

所以平面*PAD*⊥平面*ABCD*． ………14分

2、解：（1）由题意，*b*＝，又因为＝，所以＝，解得*a*＝2，

所以椭圆*C*的方程为＋＝1. ………4分

（2）因为点*N*为△*F*1*AF*2的内心，所以点*N*为△*F*1*AF*2的内切圆的圆心，设该圆的半径为*r*.

则＝＝＝＝. ………8分

（3）若直线*l*的斜率不存在时，四边形*ABED*是矩形，

此时*AE*与*BD*交于*F*2*G*的中点(，0)， ………9分

下面证明：当直线*l*的倾斜角变化时，直线*AE*与*BD*相交于定点*T*(，0).

设直线*l*的方程为*y*＝*k*(*x*－1)，

化简得(3＋4*k*2)*x*2－8*k*2*x*＋4*k*2－12＝0，

因为直线*l*经过椭圆*C*内的点(1，0)，所以△＞0，设*A*(*x*1，*y*1)，*B*(*x*2，*y*2)，

则*x*1＋*x*2＝，*x*1*x*2＝. ………11分

由题意，*D*(4，*y*1)，*E*(4，*y*2)，直线*AE*的方程为*y*－*y*2＝(*x*－4)，

令*x*＝，此时*y*＝*y*2＋×(－4)＝

＝＝

＝＝

＝＝＝0，

所以点*T*(，0)在直线*AE*上，

同理可证，点*T*(，0)在直线*BD*上. ………16分

所以当直线*l*的倾斜角变化时，直线*AE*与*BD*相交于定点*T*(，0).

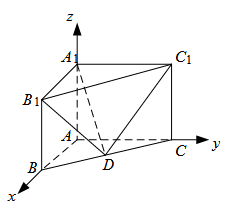
**三、附加题**

**1、**解：圆*C*：*ρ*＝2cos*θ*直角坐标方程为*x*2＋*y*2－2*x*＝0，即(*x*－)2＋*y*2＝2．

直线*l*：*θ*＝(*ρ*∈**R**)的直角坐标方程为*y*＝*x*． …………… 6分

圆心*C*到直线*l*的距离*d*＝＝1． …………… 8分

所以*AB*＝2． ……………10分

**2、解：**如图所示，分别以https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24AB%24%24%25，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24AC%24%24%25，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24AA_1%24%24%25所在直线为https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24x%24%24%25，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24y%24%24%25，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24z%24%24%25轴建立空间直角坐标系。

则https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24A%280%2C0%2C0%29%24%24%25，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24B%282%2C0%2C0%29%24%24%25，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24C%280%2C4%2C0%29%24%24%25，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24A_1%280%2C0%2C2%29%24%24%25，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24B_1%282%2C0%2C2%29%24%24%25，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24C_1%280%2C4%2C2%29%24%24%25      ......2分

（1）当https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Clambda%3D1%24%24%25时，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24D%24%24%25为https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24BC%24%24%25的中点，所以https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24D%281%2C2%2C0%29%24%24%25，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Coverrightarrow+%7BDB_1%5Cmathstrut%7D%3D%281%2C-2%2C2%29%24%24%25，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Coverrightarrow+%7BA_1C_1%5Cmathstrut%7D%3D%280%2C4%2C0%29%24%24%25，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Coverrightarrow+%7BA_1D%5Cmathstrut%7D%3D%281%2C2%2C-2%29%24%24%25，设平面https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24A_1C_1D%24%24%25的法向量为https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Coverrightarrow+%7Bn_1%5Cmathstrut%7D%3D%28x%2Cy%2Cz%29%24%24%25，则，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Cleft%5C%7B%5Ceqalign%7B+%26amp%3B4y%3D0%5Ccr+%26amp%3Bx-2z%3D0%5Ccr+%7D%5Cright.%24%24%25，令https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24x%3D2%24%24%25，则https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24z%3D1%24%24%25所以https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Coverrightarrow+%7Bn_1%5Cmathstrut%7D%3D%282%2C0%2C1%29%24%24%25，所以https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Ccos%26lt%3B%5Coverrightarrow+%7BDB_1%5Cmathstrut%7D%2C%5Coverrightarrow+%7Bn_1%5Cmathstrut%7D%26gt%3B%3D%24%24%25https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%3D%24%24%25https://gallery.fbcontent.cn/latex?decode=false&latex=%24%244%5Cover%7B3%5Csqrt5%7D%24%24%25https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%3D%7B4%5Csqrt5%5Cover15%7D%24%24%25，所以直线https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24DB_1%24%24%25与平面https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24A_1C_1D%24%24%25所成角的正弦值为https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%7B4%5Csqrt5%5Cover15%7D%24%24%25。      ......6分

（2）因为https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Coverrightarrow+%7BBD%5Cmathstrut%7D%3D%5Clambda%5Coverrightarrow+%7BDC%5Cmathstrut%7D%24%24%25，所以https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24D%28%7B2%5Cover+%5Clambda%2B1%7D%2C%7B4%5Clambda%5Cover%5Clambda%2B1%7D%2C0%29%24%24%25，所以https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Coverrightarrow+%7BA_1C_1%5Cmathstrut%7D%3D%280%2C4%2C0%29%24%24%25，https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%7B%5Coverrightarrow+%7BA_1D%5Cmathstrut%7D%7D%3D%28%7B2%5Cover%5Clambda%2B1%7D%2C%7B4%5Clambda%5Cover%5Clambda%2B1%7D%2C-2%29%24%24%25，设平面https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24A_1C_1D%24%24%25的法向量为https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Coverrightarrow+%7Bn_2%5Cmathstrut%7D%3D%28x%2Cy%2Cz%29%24%24%25，则，则https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Cleft%5C%7B%5Ceqalign%7B+%26amp%3B4y%3D0%5Ccr+%26amp%3B%7B2%5Cover%5Clambda%2B1%7Dx-2z%3D0%5Ccr+%7D%5Cright.%24%24%25，令https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24z%3D1%24%24%25，则https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24x%3D%5Clambda%2B1%24%24%25，所以https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Coverrightarrow+%7Bn_2%5Cmathstrut%7D%3D%28%5Clambda%2B1%2C0%2C1%29%24%24%25。      ......8分

又平面https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24A_1B_1C_1%24%24%25的一个法向量为https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Coverrightarrow+%7Bn_3%5Cmathstrut%7D%3D%280%2C0%2C1%29%24%24%25，由题意得https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%7C%5Ccos%26lt%3B%5Coverrightarrow+%7BDB_1%5Cmathstrut%7D%2C%5Coverrightarrow+%7Bn_1%5Cmathstrut%7D%26gt%3B%7C%3D%24%24%25https://gallery.fbcontent.cn/latex?decode=false&latex=%24%241%5Cover2%24%24%25，所以https://gallery.fbcontent.cn/latex?decode=false&latex=%24%241%5Cover%5Csqrt%7B%28%5Clambda%2B1%29%5E2%2B1%7D%24%24%25https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%3D%24%24%25https://gallery.fbcontent.cn/latex?decode=false&latex=%24%241%5Cover2%24%24%25，解得https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Clambda%3D%5Csqrt3-1%24%24%25或https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Clambda%3D-%5Csqrt3-1%24%24%25（不合题意，舍去），所以实数https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Clambda%24%24%25的值为https://gallery.fbcontent.cn/latex?decode=false&latex=%24%24%5Csqrt3-1%24%24%25。      ......10分