Math

1.

To understand the academic performance of 1,000 students, the systematic sampling method is adopted to choose 40 samples. What should the sampling interval be?

2.

A tetrahedron's edge length is √2 and its four points are on a sphere, so what is the sphere's area?

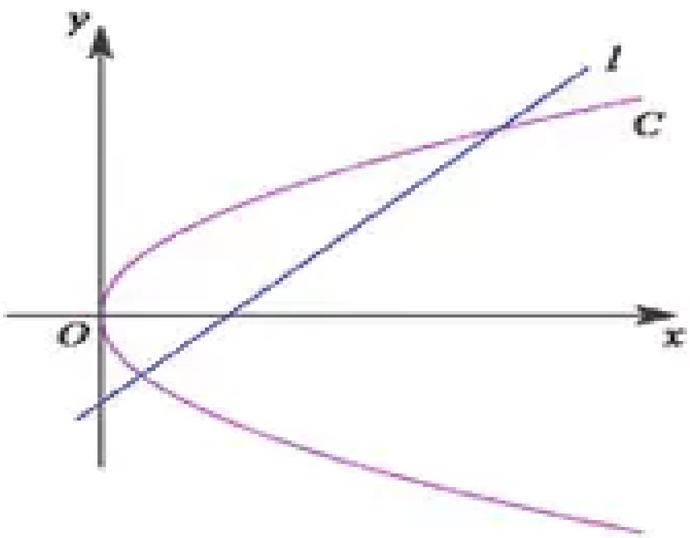
3.

Given f (x) = sinx - (2sqrt (3)) (sin^2(pi/2)):

A) Find f(x)'s smallest positive revolution

B) Find f(x)'s smallest value, given that the period is [0,2pi/3]

4.



______

As illustrated in the figure above,in the frame xOy, we have a line l :x-y-2=0 and a parabola C:$y^2=2px(p>0)$

I) If l passes through the focus of the parabola C,find the equation of the parabola.

II) Given that there are two different points P and Q that is symmetrical about line l

1) Prove that the coordinates of the middle point of the line segment PQ is (2-p,-p)

2) Find the range of p.

– 2016 Jiangsu *Gaokao*

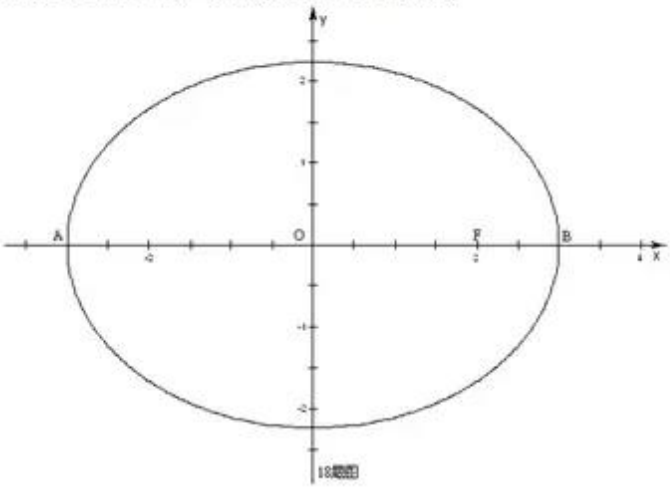
5.

18.（16 分）在平面直角坐标系 xoy 中，如图，已知椭圆$\frac{x^2}{9}+\frac{y^2}{5}=1$ 的左右顶点为 A,B，右焦点为 F，设过点 T(t,m)的直线 TA,TB 与椭圆分别交于点 $M(x_1,y_1)$，$N(x_2,y_2)$，其中 $m>0,y_1>0,y_2<0$.

(1)设动点 P 满足 $PF^2-PB^2=4$,求点 P 的轨迹

(2)设 $x_1=2,x_2=\frac{1}{3}$，求点 T 的坐标

(3)设 t=9,求证：直线 MN 必过 x 轴上的一定点(其坐标与 m 无关)



Given an ellipse $x^2/9+y^2/5=1$ whose vertices are A and B and right focus F.Suppose that line TA and line TB which pass through T(t,m) intersect the ellipse at $M(x_1,y_1)$ and $N(x_2,y_2)$ individually.($m>0,y_1>0,y_2<0$)

1) Moving point P satisfies equation $PF^2-PB^2=4$, find the track of P.

2) Assume that $x_1=2$, $x_2=1/3$, find the cooordinates of T

3) Assume that t=9, prove that line MN must passes through a definite point on the x axis (whose coordinates are independant of m)

– 2010 Jiangsu *Gaokao*

6.

Assume a positive sequence {an},whose sum of the first n terms is Sn, given that $2an=a_1+a_3$,sequence{√Sn} is an Arithmetic Sequence with a common difference d.

1) Find the general formula of the sequence {an}(in n and d)

2) Assume c ∈R,for any positive integrals m,n and k that satisfy m+n=3k and m≠n,exists equality Sm+Sn>cSk

– 2010 Jiangsu *Gaokao*

7.

Assume sequence {an} that satisfies |an-a(n+1)/2|≤1,n∈N+

1) Prove that|an|≥2^(n-1)($|a_1|$-2)(n∈N*)

2) If |an|≤(3/2)^n,n∈N*, prove that |an|≤2,n∈N*

– 2016 Zhejiang *Gaokao*