

Plant

Geometry Team - Question #1

March 20, 1993

The coordinates of the vertices of a triangle are (2,3), (4,7), and (5,6). Find the area of the triangle.

Geometry Team - Question #2

March 20, 1993

A cone and a hemisphere share bases, a circle with radius 2, and the cone is inscribed inside the hemisphere. Find the volume of the region outside the cone and inside the hemisphere.

Geometry Team - Question #3

March 20, 1993

Two concentric spheres have radii 8 and 15, respectively. A plane is tangent to the inner sphere and intersects the outer sphere. What is the area of the region of the plane bounded by the outer sphere?

Geometry Team - Question #4

March 20, 1993

Six lines are situated in a plane such that no two are parallel and no three are concurrent. How many points of intersection are there?

Geometry Team - Question #5

March 20, 1993

Find the area of an equiangular octagon, the lengths of whose sides are alternately 1 and $\sqrt{2}$.

Geometry Team - Question #6

March 20, 1993

On the hypotenuse AB of right $\triangle ABC$, D is the point for which $CB=BD$. If $m\angle B = 40^\circ$, find $m\angle ACD$.

Geometry Team - Question #7

March 20, 1993

In parallelogram ABCD, \overline{AC} and \overline{BD} are diagonals. If $BC=7$, $AB=8$, and $\angle C=60^\circ$, find the value of $AC^2 - BD^2$.

Geometry Team - Question #8

March 20, 1993

Of five lines, no two are parallel and no three are coincident. Into how many bounded regions do they divide the plane?

Geometry Team - Question #9

March 20, 1993

In $\triangle ABC$, $AB=BC=5$. Point D is on line segment AC, and $DC=4$. If $BD=4$, find AD.

Geometry Team - Question #10

March 20, 1993

In right $\triangle ABC$, leg $AC=4$ and leg $BC=8$. A square is drawn exterior to the triangle with \overline{AB} as one side. Find the distance from C to the intersection of the diagonals of the square.

Geometry Team - Question #11

March 20, 1993

The length of the base of an isosceles triangle is $\sqrt{2}$. The medians to the legs of the triangle meet at right angles. Find the area of the triangle.

Geometry Team - Question #12

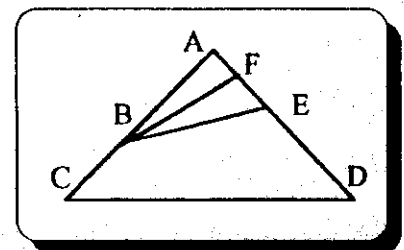
March 20, 1993

A 72" tall man and 40" son came upon a large spherical tank. Each walked upright toward the point where the sphere rested on the ground. The son was able to walk 16" closer to the resting point than the dad. Find the radius of the sphere.

Geometry Team - Question #13

March 20, 1993

In the diagram, F is the midpoint of AE, $3AE=ED$, $AD=18$, $AB=9$, $BC=3$. The area of $BEDC = 72$; find the area of $\triangle BFE$.



Geometry Team - Question #14

March 20, 1993

One side of a triangle is 18 inches and the opposite angle has measure 30° . Find the length of the diameter of the circumscribed circle.

Geometry Team - Question #15

March 20, 1993

The three vertices of $\triangle ABC$ are $A(8,3)$, $B(4,1)$, $C(-5,4)$. Find the length of the altitude to \overline{AB} .