Free essay about archimedes was trying to solve the problem of squaring the circl...

Science, Astronomy

Biography of Archimedes

Archimedes was born in 287 BC in Syracuse on the island of Sicily. His father Phidias, was astronomer and mathematician; He provided him education in sciences. Archimedes had his studies in Alexandria. Archimedes met the famous astronomer Conon, the astronomer and mathematician Eratosthenes, with whom he maintained in the future scientific correspondence. He worked in a library where he studied Democritus, Eudoxus and other scientists.

Archimedes later published several works in mathematics. His work consists of providing the areas of figures bounded by the curves and volumes of bodies bounded by arbitrary planes. He is the one of the pioneers of integral calculus in the history of mathematic. The most important discovery of Archimedes is to proof that the volume of a sphere and a cylinder circumscribing relate to each other as 2: 3. Such evidence is his tombstone.

The area of a circle is equal to the area of a right triangle with legs equal length and radius of the circle

The area of a circle refers to the area around the square, as 11: 14.

The ratio of the circumference to the diameter of more than P1 / 7 and less than 310/71.

Though the accuracy of some biographical data cannot be confirmed, unfortunately, Archimedes was considered a classic type " miscellaneous scientist" by those tales.

He pondered long way to solving the task entrusted to him the king of

Girona, the number of silver impurity in his golden crown. Archimedes was taking the bath notice the relation between the water displacement and the amount of material (mass) of anybody, and thus the crown. At that moment, he ran out naked in the street screaming " eureka." He has the credit of the well-known expression: " Give me a fulcrum, and I will move the earth." Plutarch Archimedes praised for his part in the defense of his native city of Syracuse by the Romans. Archimedes catapults precipitated Unleashes large stones and lead, and special cranes allow them to sink enemy ships. These and others like them, legends suggest that Archimedes refused Platonic tradition of complete detachment from the practice of science, although not preserved, and can be and did not exist, the work of Archimedes in applied mathematics.

Archimedes died in 212 B. C. by a Roman soldier during the invasion of Syracuse. His last words to his killer, allegedly contained a request not to destroy the drawing on which he thought. The Rome general Marcel regretted the death of this Mathematician; he executed the killer and buried Archimedes. One hundred years later, Cicero found the tomb of Archimedes over the ball, inscribed into the cylinder, depicted on the gravestone (Clagett, 1964).

Those stories contained only a small part of Archimedes worked in his life. And his accomplishments were diligently translated and commented on the Arabs, and then Western scientists.

The problem of the trisection of an angle was a problem of the division of an angle into three equal parts arose from the needs of architecture and construction equipment.

Archimedes created the procedure to trisect an angle in three equal parts, in order to use it in ornaments, multifaceted colonnades and temples decoration. The solution was original and simple at the same time. Measurement range is a problem of squaring the circle. To construct a square whose area would be equal to the square of the circle. Archimedes solved the previous problem. In his treatise " Measuring range", he proves the following three theorems:

Theorem I: Area of a circle is equal to the area of a right triangle, one of the legs of which is equal to the circumference of the circle, and the other the radius of the circle.

Theorem II: Area of a circle refers to the area of the square built on the diameter, about as 11: 14.

Theorem III: C-3d d, where C is the length of the circumference, and its diameter d-. Where, d Archimedes transcendental plane curve whose equation in polar coordinates is given by Archimedean spiral described by a point M, moving uniformly in a straight line, which revolves around the point O, belonging to this line. At the start of the movement, M coincides with the center of rotation O-line. The length of the arc between the points u: Area of the sector bounded by the arc of an Archimedean spiral and two radius vectors and corresponding angles and:

In the group of infinitesimal methods include a method of exhaustion, the method of integral sums, differential methods. One of the earliest methods is integral sums. It was used in the calculation of areas of figures, the volume of bodies, the lengths of curves. To calculate the amount of body rotation is broken into parts, and each part can be approximated by (close) described

and inscribed bodies, the volume of which can be calculated. It now remains to choose the approximate top and bottom of the body so that the difference of their volumes can be made arbitrarily small (Dijksterhuis, 1987).

Archimedes' work covers almost all areas of mathematics at the time: he owns remarkable studies on geometry, arithmetic, algebra. So, he found all semi-regular polyhedra, which now bear his name, significantly developed the theory of conic sections. Archimedes gave a geometric method for solving cubic equations of the form x^2*(a±x)= b, the roots of which he found with the help of intersection of the parabola and the hyperbola. Archimedes spent and complete study of these equations, i. e., found the conditions under which they will have real positive distinct roots and the roots of what will be the same.

However, the main mathematical achievements of Archimedes relate to the problems that now belongs to the field of mathematical analysis. The Greeks were able to Archimedes to determine the areas of polygons and a circle, the volume of prisms and cylinders, pyramids and cones. But Archimedes found a much more general method for calculating the area or volume; for this he improved and skillfully used the method of exhaustion of Eudoxus of Cnidus. In his " Letter to the method of Eratosthenes" (sometimes called the " Method of Mechanical Theorems") he used to calculate the infinitesimal volume. Ideas Archimedes formed later the basis of integral calculus. Archimedes was able to establish that the scope and cones with a common vertex, inscribed in a cylinder, related as follows: two cones sphere: cylinder 1: 2: 3. (

In the essay Quadrature of the parabola, Archimedes proved that the area of

a segment of a parabola cutoff by a straight line from it is 4/3 from the square inscribed in this segment of the triangle. He calculated the sum of an infinite series to prove those (Gow, 2005):

∑(1/4^n)(n= 0 to ∞) = 1 + 1/4^1 + 1/4^2 1/4^3 + 1/4^n = 4/3

Each term of the series - it is a common area of a triangle inscribed in underserved by previous members of the series of the segment of the parabola.

In addition to the above, Archimedes made the calculation of the surface area for the segment of the world and turn them open " the spiral of Archimedes,". Archimedes defined the volume volume of segments of balls, ellipsoids, paraboloids and hyperboloids of two sheets of rotation.

With the development of mathematics, physics and astronomy, it is important to know how to find the highest and lowest values of varying sizes, the extremes. All such problems can now be solved using differential calculus. Archimedes first saw the connection of these problems with the problems of the definition of tangent and showed how to solve problems on the extremes.

Not until 17th century, scientists were able to continue and develop the work of this great Greek mathematician. Though his ideas are ahead of his time, we cannot deny that Archimedes made the great contribution on the development of mathematics.

Reference List

Boyer, Carl Benjamin (1991). A History of Mathematics. New York: Wiley.

Clagett, Marshall (1964-1984). Archimedes in the Middle Ages. 5 vols.

Madison, WI: University of Wisconsin Press.

Dijksterhuis, E. J. (1987). Archimedes. Princeton University Press, Princeton. Republished translation of the 1938 study of Archimedes and his works by an historian of science.

Gow, Mary (2005). Archimedes: Mathematical Genius of the Ancient World. Enslow Publishers

In this draft, I am trying to combine the Archimedes personal life and his scientific work together, review him and his work as a people lived in history and made a great contribution to science.

I think that the strongest part of my paper is that, I have tried my best to cover all the sides of Archimedes and his accomplishments.

What I struggled with most was: 1. With so many materials I hold on hand, I felt hard to build a good structure to finish this paper. As you can see now, I simply divided the paper into three parts with storeys, accomplishments and analysis.

2. I have a hard time rewrite the accomplishments in my words.

My two priorities for revising would be structure reforming and grammar checking. Though I think, I did better on grammar this time.

I know that I also need to work on: honestly I am not sure what kind of part I should work on also now. After reading the paper over and over, I think this draft is the best I can get for now. I sincerely ask some more advice on how to revise it. Thank you!

At this point, I would like to ask you that: for those ancient Greek storeys, most of which I got was more like a tale than a fact. I do not think I can

figure out the dates for those and I am not sure if those stories of Archimedes I wrote down would be true and appropriate.