## SIMPLIFICATION OF OVAL CONSTRUCTION IN THE CONSTRUCTION OF AXIOMETRY OF GEOMETRIC SHAPES

#### **U.T.Berdiyev**

1st year student of Yangiyer branch of TKTI.

Phone: +998(97)-123-84-74.

Email: usmonberdiyev5@gmail.com

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**Abstract.** An unconventional method was developed to explain to students the topic of making an "oval in the axionometry of geometric shapes", which is more complicated among the subjects of "Engineering and computer graphics" of higher educational institutions. In this topic, the convenient style and neat handling of the oval in the axionometry of various geometric shapes will allow students to understand this topic by 80-90%.

Key words: Point, frontal plane, horizontal plane, profile plane, curve, circle, radius, straight line.

### УПРОЩЕНИЕ ПОСТРОЕНИЯ ОВАЛА ПРИ ПОСТРОЕНИИ АКСИОМЕТРИИ ГЕОМЕТРИЧЕСКИХ ФИГУР

Аннотация. Разработан нетрадиционный метод объяснения студентам темы построения «овала в аксиометрии геометрических фигур», которая является наиболее сложной среди предметов «Инженерная и компьютерная графика» высших учебных заведений. В данной теме удобный стиль и аккуратное обращение с овалом в аксиометрии различных геометрических фигур позволит студентам усвоить данную тему на 80-90%.

*Ключевые слова:* Точка, фронтальная плоскость, горизонтальная плоскость, профильная плоскость, кривая, окружность, радиус, прямая.

The subject of "Engineering and Computer Graphics" is a broad-based subject and a lot of attention is paid to it now. Therefore, it is important to convey the information taught in this subject in such a way that students can be clearly understood. With this in mind, one of the more difficult topics in science is explained in an unconventional way. Three planes of projections, which are perpendicular to each other, intersect, form an axionometric plane. We describe the axiometry of various geometric shapes using this plane. A very large number of geometric shapes consist of circles, holes, semicircles, and various shapes. In describing their isometry, we use an oval. Oval making for school and university students is carried out in the following order. We take a point on the plane and draw a circle to be described, through the center of which the x, y, z axes and a



horizontal auxiliary line perpendicular to z are drawn (Fig. 1.1, a). This horizontal line is the large

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**2.** Points 3, 4 and 5, 6 are connected in a circular with points 1 and 2 on the z-axis centered (Figure 1.1, b). **3.** Points 3 and 4 or 5 and 6 are connected by point 1 or 2, points 7 and 8 are formed in a horizontal line. Points 3 and 6 and 4 and 5 are connected in a circular line through points 7 and 8 (Figure 1.1, d). Here the large axis of the oval in the plane H is AB B z, while the small CD axis joins with the z axis. In the V plane, the oval is executed in the same way as in the plane H. Here the major axis of the oval is AB B y, and the small CD axis is joined by the y axis. Making an oval in the plane V is given in Figure 1.2, a. But here the points 1 and 2 are marked at the intersection of the y-axis with the circle. When making the large axis of the oval perpendicular to the y-axis, the intersecting points of the arcs drawn from points 1 and 2 are used. The isometry of the circle in the plane W is given in Figure 1.2, b. When making these elliðs, the large axis AB B x is joined by the small CD axis x axis. When making such an oval, point 1 and 2 are marked at the intersection of the circle with the x axis. The large arrow AB is held using the intersection of the arcs drawn from points 1 and 2 are marked at the intersection of the circle with the x axis. The large arrow AB is held using the intersection of the arcs drawn from points 1 and 2. The school and university pragram teaches how to make an oval in this order, and so far no change has been made to this method. *And the way we've developed it is much more comfortable than that*.

A new and convenient method of drawing an oval: A single point is taken from a plane, and horizontal and vertical center lines are drawn from that point (Figure 1.3). A given point is taken as the center of a circle, and a circle is formed through that point. The value of the circle is optional, but given in dimensions in assignments.

*ResearchBib IF-2023: 11.01, ISSN: 3030-3753, Valume I Issue 9* The value here is taken voluntarily simply to learn how to make an oval in a comfortable

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style. A circle is drawn using a given point (Figure 1.4).



From the point of intersection of the Figure 2.1 resulting flame with the "z" and "y" axis, a curve is drawn from the center to the two extreme parts of the circle at the same radius, as shown in Figure 1.5. In the subsequent process, the curves intersected by the circle are connected with straight lines (Fig. 1.6). Adjacent straight lines intersecting with a circle are denoted by numbers as points (Figure 1.6). This will create convenience when drawing an oval.



Then the points where the circle intersects with the "z" and "y" axis are also indicated by a number (Figure 1.7). A curve is drawn from point 5 to points 2-4, and a curve from point 6 to points 1-3 is drawn (Figure 1.7). A circle is formed using that point, marking the distance from the junction of the resulting curves to the circle (Figure 1.8).

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The resulting circle is treated as the point "b" at the intersection of the large circle with the y-axis, and a curve is drawn to the points "a" and "c" using the point "b" (Figure 1.9). As you can see, half of the oval is ready (Figure 1.10). The second leg of the circle ends the oval using the same technique (Figure 1.11). This method is freely practiced on the Frontal and Profile planes.



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# Figure 2.1

Another convenient aspect of our new style is that if you have to draw small ovals, it will be very difficult to draw according to the system taught in the University and School curriculum. For example, when turning off the auxiliary lines, the oval may also frown and open. In our style, the auxiliary lines using the inside of the oval were used as little as possible. This will help preserve the entire oval.

**Conclusion:** This saves the student's time through an unconventional method, allowing him to absorb knowledge about the topic more deeply and more easily. In addition, the isometry of the part significantly reduces the lines in the construction process, allowing for faster completion of this process and perfect learning of it. Constructing the axonometry of details in oval drawing in this method is somewhat easier and the topic of "Axonometric Projections" can be mastered by 50% in the traditional way, and by 90% in the non-traditional way. This serves not to quench students' interest in science.

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