CURVES AND SURFACES IN COMPUTER GRAPHICS, THEIR PROFITABILITY

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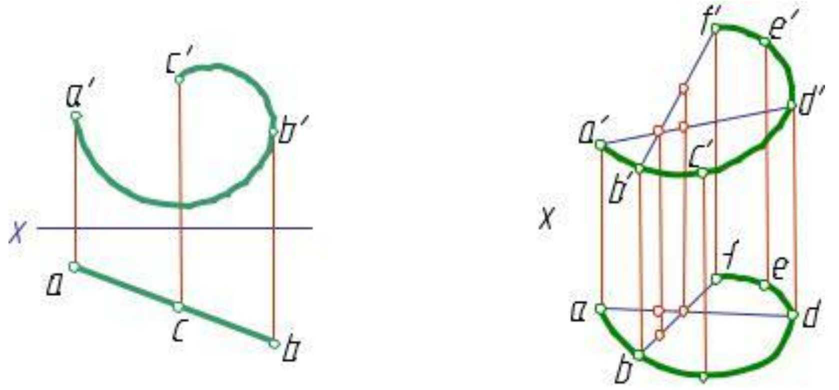
Annotation. The class of a plane curve is determined by the number of attempts made on it from an arbitrary point of that plane, and computer graphics the class of a spatial curve is determined by the number of urinal planes passed to it through some straight line.

Keywords: computer graphics, plane, frontal, horizontal, straight line, space, curve, geometry, point.

In drawing geometry, the practical use of the geometric and mechanical properties of curves graphically is considered, giving them a simple kinematic definition. Therefore, the curve is taken as the trace of a point moving continuously in a certain direction in space or plane.

The curves are divided into flat (Figure 1,A) and spatial (Figure 1,B) curves.



a) b)

Draw 1

Curves are divided into legal and lawless curves. The set of points that make up a curve is legal if it is built into a certain law, but rather the set of points is not based on what law Hecht is, such a curve is called a lawless curve. They divide into algebraic and transcendent curves, depending on the equations of the legal curves in the Cartesian coordinate system. The curve whose equation is expressed through an algebraic function is algebraic, while the curve represented by a transcendent function is called a transcendent curve.

Algebraic curves are characterized by the concepts of order and class. The order of the curves will be equal to the degree of the equation representing it.

The order of graphically planar curves is determined by its straight line, and the order of the spatial curve is determined by its maximum number of intersection points with some plane.

The class of a plane curve is determined by the number of attempts made on it from an arbitrary point of that plane, and the class of a spatial curve is determined by the number of urinal planes passed to it through some straight line.

The order and class of the curve will be different. Only the order and class of second-order curvatures are the same, which is equal to 2.

Flat curves can be given in analytic and graphical representations. In the analytical view, it is given by the following points:

• in the Cartesian coordinate system with polynomial f(x,u)=0;

• in the polar coordinate system with r=f(φ;

• in parametric terms with x=x(t) and u = u(t).

There are different ways in which curves are given graphically.

A smooth curve is formed by the continuous motion of a point belonging to the plane. From each point of a plane curve, one urination and one normal transfer can be made to it.

a given ℓ flat curve is shown to have urination and normal transfer at some point A of it. To do this, we pass the straight lines AE and AF, which cut the curve through point A. let's start by approximating point ye by a curve to point A. As a result, the Ae cutter begins to turn around Point A. when the ye point is superimposed with Point A, the Ae cutter T1 characterizes the urinal. It is called a half-urination transferred at a given point of the curve ℓ. We also move point F over the curve and lower it with Point A upside down. AF cutter T2 makes half urination dressing. A straight line in which the opposite direction T1 and t2 half-attempts are characteristic is called an urination, which is transferred to the curve at the given point. A curve made up of such points is called a smooth curve.

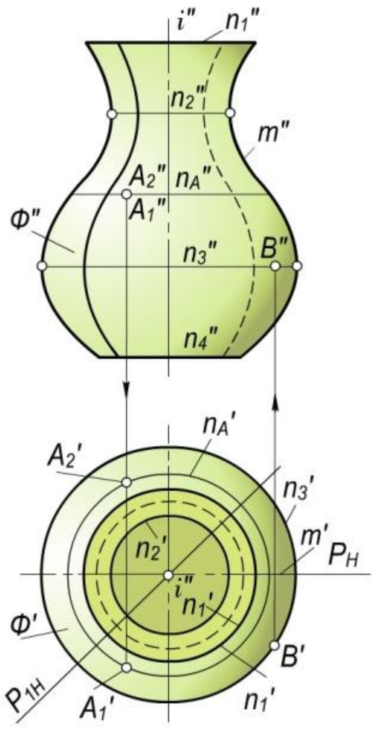
The perpendicular n straight line of the curve transferred to the T urinal at point A is called its normal. Sometimes half-attempts can intersect without overlapping. Such points are called a break point. In practice, problems of urination and normal transfer to curves are common, so we can configure some graphical methods of urination and normal transfer.

Transfer of parellel urination to a given direction. Any given line ℓ s ℓ s line curve to the curve parallel to spend urinma the design direction of the design direction which is parallel strips and the dressing is cut with 111, 221, 331,... vatar a point to the curve of the line through two equal stripes, the error is held. where q is the point of intersection of the curve with ℓ, one finds B. A T urinal is passed through point B parallel to the given direction S.

Passing urination to it through a point lying on a curve. A given ℓ curve is cut into straight lines that protrude from point a lying on it. Perpendicular to the approximate direction of the urinal passing through point a, a straight line B is passed. starting from the points where B crossed the straight line to the incisors, usha is poured by measuring the Watar length at ℓ of the line. The set of points Q characterizes the curve. the intersection point of the curve q with B is characteristic of the urinal t when it joins B with Point A.

When the Centers of curvature are made for all points of an Evolute and an evolvent Biror curve, their set forms a egri1 curve. This is called the evolution of the curve ℓ given a curve ℓ1. ℓ curve ℓ1 is called evolventa with respect to evolution).

The attempts of evolution are the normals of the EV evolvent. An infinite number of evolventas may be located in the evolution attempts. Therefore, the evolution of a curve cannot determine its own evolution, but its evolution can determine its own.



Draw 2

If a parallel is parallel to the axis of rotation of the urinal transferred from the point of intersection with the Prime meridian to the Prime Meridian, this parallel is called the equator or buyin line. This parallel is called the equator if two yen are larger than adjacent parallels, and the buyin line if smaller than them. Hence, there may be several lines of equator and buine on a surface of rotation. The rotation in Figure 2 is on the surface from the parallels N2(N2',N2") is the buyine, and n3(N3',N3") is the Equator Line.

Like other surfaces, a rotation surface consists of an infinite set of points. These points cannot be described in a full-fledged drawing. Therefore, urinating cylinders are transferred to the surface of the rotation perpendicular to H and V. the line of intersection of urinary cylinders with N is called the horizontal ocher of the surface, and the line of intersection with V is called its frontal ocher. Rotational surfaces are often depicted with their horizontal and frontal ocherks. The rotation in Figure 2 is illustrated by the frontal ocher of the surface with the parallels Prime meridian m" and N1", N4", and the horizontal ocherki with the parallels n2' and N3'.

Horizontal and frontal ocherks also help to identify visible and inconspicuous parts of surface projections.

With the help of parallels, projections of points are found on the surface. For example, the frontal projections of points A1 and A2 belonging to the rotation surface are defined in horizontal projections A1" and A2" na parallel horizontal projection n'a.

The horizontal B' projection of the point B lying on the equator is given. Its B "frontal projection is in the N3" frontal projection of the equator.

Rotational surfaces are widely used in Mechanical Engineering and construction practice. Because, most mechanisms move in a circular motion, and the rotating surfaces are easily made in a tin.

The largest paralle of a surface is called its equator and the smallest paralle is called its neck.

The task of the mechanisms of the machine to be designed, depending on the technical requirements and shape of which it is poured, is selected the impeller of the rotation surface.

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