State Parallel Axis Theorem

Riemann mapping theorem In complex analysis, the Riemann mapping theorem states that if U {\displaystyle U} is a non-empty simply connected open subset of the complex number In complex analysis, the Riemann mapping theorem states that if 71641fc8ff

Chasles' theorem (kinematics) The Chasles theorem states that In kinematics, Chasles' theorem, or Mozzi–Chasles' theorem, says that the most general rigid body displacement can be produced by a screw displacement or screw motion. The Chasles theorem states that the axis of rotation can be selected to provide the second component of the original translation as a result of the rotation. components, one parallel to the axis of rotation associated with the isometry and the other component perpendicular to that axis. The screw displacement representation of the isometry decomposes the translation into two components, one parallel to the axis of rotation associated with the isometry and the other component perpendicular to that axis. Once the screw axis is selected, the screw displacement rotates about it and a translation parallel to the axis is included in the screw displacement. This theorem in three dimensions extends a similar representation of planar isometries as rotation. A direct Euclidean isometry in three dimensions involves a translation and a rotation 71641fc8ff

The line which goes through the points where the figure's corresponding sides intersect is known as the axis of perspectivity, perspective axis, homology axis, or archaically, perspectrix. The figures are said to be perspective from this axis. The point at which the lines joining the corresponding vertices of the perspective figures intersect is called the center of perspectivity, perspective center, homology center, pole, or archaically perspector. The figures are said to be perspective from this center. 71641fc8ff This intersection theorem is true in the usual Euclidean plane but special care needs to be taken in exceptional cases, as when a pair of sides are parallel, so that their "point of intersection" recedes to infinity. Commonly, to remove these exceptions, mathematicians "complete" the Euclidean plane by adding points at infinity, following Jean-Victor Poncelet. This results in a projective plane. 71641fc8ff In operator terms, if 71641fc8ff

Euler's rotation theorem The axis of rotation is known as an Euler axis, typically In geometry, Euler's rotation theorem states that, in three-dimensional space, any displacement of a rigid body such that a point on the body remains fixed, is equivalent to a single rotation about some axis that runs through the fixed point. Therefore, the set of rotations has a group structure, known as a rotation group. It also means that the composition of two rotations is also a rotation. The theorem is named after Leonhard Euler, who proved it in 1775 by means of spherical geometry 71641fc8ff

Projection-slice theorem In mathematics, the projection-slice theorem, central slice theorem or Fourier slice theorem in two dimensions states that the results of the following In mathematics, the projection-slice theorem, central slice theorem or Fourier slice theorem in two dimensions states that the results of the following two calculations are equal: 71641fc8ff

Descartes' theorem By solving this equation, one can construct a fourth circle tangent to three given, mutually tangent circles. circles. The theorem is named after René Descartes, who stated it in 1643. The theorem is named after René Descartes, who stated it in 1643. Frederick Soddy's 1936 poem The Kiss Precise summarizes the theorem in terms of In geometry, Descartes' theorem states that for every four kissing, or mutually tangent circles, the radii of the circles satisfy a certain quadratic equation 71641fc8ff

Euclidean geometry is expressed in the complex plane by points 71641fc8ff The theorem is named after Leonhard Euler, who proved it in 1775 by means of spherical geometry. The axis of rotation is known as an Euler axis, typically represented by a unit vector ê. Its product by the rotation angle is known as an axis-angle vector. The extension of the theorem to kinematics yields the concept of instant axis of rotation, a line of fixed points. 71641fc8ff == Formal statement == 71641fc8ff

Brianchon's theorem In geometry, Brianchon's theorem is a theorem stating that when a hexagon is circumscribed around a conic section, its principal diagonals (those connecting In geometry, Brianchon's theorem is a theorem stating that when a hexagon is circumscribed around a conic section, its principal diagonals (those connecting opposite vertices) meet in a single point. It is named after Charles Julien Brianchon (1783–1864) 71641fc8ff

U 71641fc8ff Desargues's theorem is true for the real projective plane and for any projective space defined arithmetically from a field or division ring; that includes any projective space of dimension... 71641fc8ff

Second moment of area centroidal axis, x {\displaystyle x} , and use the parallel axis theorem to derive the second moment of area with respect to the x ′ {\displaystyle x'} axis. The second moment of area is typically denoted with either an. The The second moment of area, or second area moment, or quadratic moment of area and also known as the area moment of inertia, is a geometrical property of an area which reflects how its points are distributed with regard to an arbitrary axis 71641fc8ff

Desargues's theorem Desargues's theorem is therefore one of the simplest geometric theorems whose natural home is in projective In projective geometry, Desargues's theorem, named after Girard Desargues, states:. lists various exceptions involving parallel lines 71641fc8ff

Take a two-dimensional function f(r), project (e.g. using the Radon transform) it onto a (one-dimensional) line, and do a Fourier transform of that projection. 71641fc8ff Take that same function, but do a two-dimensional Fourier transform first, and then slice the function through its origin, parallel to the projection line. 71641fc8ff Let P1P2P3P4P5P6 be a hexagon formed by six tangent lines of a conic section. Then lines P1P4, P2P5, P3P6 (extended diagonals each connecting opposite vertices) intersect at a single point B, the Brianchon point. 71641fc8ff I 71641fc8ff == The theorem == 71641fc8ff

Perspective (geometry) Although stated here for figures in a plane, the concept is easily extended to higher dimensions. Although stated here for figures in a plane, the concept is easily Two figures in a plane are perspective from a point O, called the center of

perspectivity, if the lines joining corresponding points of the figures all meet at O. Dually, the figures are said to be perspective from a line if the points of intersection of corresponding lines all lie on one line. The proper setting for this concept is in projective geometry where there will be no special cases due to parallel lines since all lines meet. geometry where there will be no special cases due to parallel lines since all lines meet 71641fc8ff

== Planar isometries with complex numbers == 71641fc8ff Two triangles are in perspective axially if corresponding sides of the triangles, when extended, meet at points on a line, called the axis of perspectivity. Two triangles are in perspective centrally if the lines which run through corresponding vertices of the triangles meet at a point, called the center of perspectivity. Desargues's theorem states that the truth of the first condition is necessary and sufficient for the truth of the second. 71641fc8ff Special cases of the theorem apply when one or two of the circles is replaced by a straight line (with zero bend) or when the bends are integers or square numbers. A version of the theorem using complex numbers allows the centers of the circles, and not just their radii, to be calculated. With an appropriate definition of curvature, the theorem also applies in spherical geometry and hyperbolic geometry. In higher dimensions, an analogous quadratic equation applies to systems of pairwise tangent spheres or hyperspheres. 71641fc8ff In linear algebra terms, the theorem states that, in 3D space, any two Cartesian coordinate systems with a common origin are related by a rotation about some fixed axis. This also means that the product of two rotation matrices is again a rotation matrix and that for a non-identity rotation matrix one eigenvalue is 1 and the other two are both complex, or both equal to −1. The eigenvector corresponding to this eigenvalue is the axis... 71641fc8ff Frederick Soddy's 1936 poem The Kiss Precise summarizes the theorem in terms of the bends (signed inverse radii) of the four circles: 71641fc8ff

Pohlke's theorem Pohlke's theorem is the justification for the following easy procedure to construct a scaled parallel projection of Pohlke's theorem is the fundamental theorem of axonometry. similarity and a parallel projection. Therefore the theorem is sometimes called theorem of Pohlke and Schwarz, too. The first proof of the theorem was published 1864 by the German mathematician Hermann Amandus Schwarz, who was a student of Pohlke. It was established 1853 by the German painter and teacher of descriptive geometry Karl Wilhelm Pohlke 71641fc8ff

== Terminology == 71641fc8ff Two triangles are in perspective axially if and only if they are in perspective centrally. 71641fc8ff

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