Conic Sections Key Words

Analytic Geometry Lesson

analytic geometry – the study of geometric figures using the coordinate plane

midpoint – a point on a line segment that divides it into two equal parts; the halfway point of a line segment

Introduction to Conic Sections Lesson

apex of a cone - the vertex at which a cone converges opposite its base

axis of a cone - the line through the apex of a cone that is perpendicular to its base

conic section - a planar figure formed by the intersection of an infinite right circular or double cone with a plane not passing through its apex; depending on the angle of the plane with respect to the cone, the conic section will be a circle, an ellipse, a parabola, or a hyperbola

degenerate conic - a planar figure formed by the intersection of an infinite double cone with a plane passing through the apex; depending on the angle of the plane with respect to the cone, the degenerate conic will be a point, a line, or a pair of intersecting lines

double cone - a geometric figure formed when two right circular cones are placed apex to apex along a single axis

right circular cone - a cone with a circular base and an axis that passes through the center of the base

Circles Lesson

center of circle – the point within a circle that is equidistant from every point on the circle

circle – the locus of points in a plane that are a fixed distance from a center point

locus – the set of all points that share a property

radius – the fixed distance between the center of a circle and the points on the circle

Ellipses Lesson

center of an ellipse – the point of intersection of the major and minor axes of an ellipse

ellipse – the set of points P in a plane such that the sum of the distances from P to each of the foci, F_1 and F_2, is a constant, k

focus – a point used to define a conic section such as a parabola, ellipse, or hyperbola

major axis – the segment that connects the vertices of the ellipse and contains the foci

minor axis – the segment that has endpoints on the ellipse and is the perpendicular bisector of the major axis

vertices of an ellipse – the endpoints of the major axis of the ellipse

Parabolas Lesson

axis of symmetry – the line that is perpendicular to the directrix and passes through the focus

directrix – the fixed line used to define a parabola

latus rectum – the line segment of length $|4p|$ that has endpoints on the parabola, passes through the focus, and is parallel to the directrix

parabola – the locus of points in a plane that are equidistant from a fixed line, called the directrix, and a fixed point, called the focus, that does not lie on the directrix

vertex of a parabola – the point at which the axis of symmetry and parabola intersect, which is midway between the focus and directrix

Hyperbolas Lesson

asymptotes of a hyperbola - the two intersecting lines that pass through the center of the hyperbola which the hyperbola approaches as the curve gets further away from the center

axis of symmetry – the line that passes through the foci

branches of a hyperbola – the two curves that comprise a hyperbola

center of a hyperbola – the midpoint of both the transverse axis and the conjugate axis

conjugate axis – the line segment of length $2b$ that passes through the center of the hyperbola and is the perpendicular bisector of the transverse axis

hyperbola – a set of points P in a plane such that the absolute value of the difference between the distances from P to each of the foci F_1 and F_2 is a given constant k; $|PF_1 - PF_2| = k$

transverse axis – the line segment of length 2*a* that lies on the axis of symmetry and connects the vertices

vertices of a hyperbola – the two points at which the axis of symmetry intersects the hyperbola