

MAT 162-003 and MAT 162-300
Main Topics for Test 3
Friday, Mar. 9, 2012

(Sections 10.3, 10.4, 10.5, 10.6)

Polar Coordinates

Be able to:

- use the equations of conversion to convert from polar coordinates to Cartesian coordinates and from Cartesian coordinates to polar coordinates
- plot points and sketch graphs of simple equations and inequalities in polar coordinates
- perform tests for symmetry (in polar coordinates) about the x-axis, the y-axis, and the origin
- convert from polar form to parametric form
- find the slope of polar curves at designated points
- find the slope of tangent lines at the origin on polar curves
- find the area enclosed by a portion of a polar curve, or between polar curves (set up the integral, and evaluate it by hand if possible)
- find all points of intersection of two polar curves
- find the arc length of a portion of a polar curve (set up the integral, and evaluate it by hand if possible)

Conic Sections

Be able to:

- (in Cartesian coordinates) recognize and find the vertex (or vertices), focus (or foci), and as applicable the directrix or asymptotes of a conic, given its equation
- (in Cartesian coordinates) find the equation of a conic, given information about it
- (in Cartesian coordinates) sketch graphs (by hand) of conics, given their equation or information about them
- (in Cartesian coordinates) recognize and sketch shifted conics
- (in polar coordinates) recognize and find the focus, directrix and eccentricity of a conic given its equation
- (in polar coordinates) find the polar equation of a conic, given information about it
- (in polar coordinates) sketch graphs (by hand) of conics, given their equation or information about them
- (in polar coordinates) recognize and sketch rotated conics
- sketch and explain the reflective properties of conics