

Review information for Calculus III Test II.

The test will cover sections 11.1–11.4 and 13.1–13.5. Here is a list of useful problems to review in the Chapter Reviews on pages 733–734 and 881–882. For the most part, the problems on the test will be very similar to these.

Chapter 11 Exercises: 1–4, 19–24, 26–35, 37–39.

Chapter 13 Exercises: 2–7, 10–22, 24, 25.

The lists that follow are not necessarily exhaustive.

For a parametric curve in the plane, you should know how to:

- sketch it
- find the slopes of its tangent lines
- find the area underneath it
- find its length
- find the surface area obtained when it is rotated about either axis

For polar coordinates, you should know how to:

- move between polar and cartesian coordinates
- find the slopes of the tangent lines to the graphs of polar functions
- find the area bounded by polar curves
- find the length of a polar curve

For vectors you should know:

- the basic algebraic properties vectors
- how to find the length of a vector
- how to find and interpret the dot product of two vectors
- the relation between dot product and angle
- how to find projections
- the vector formula for work
- how to find and interpret the cross product of two vectors
- the geometry of the cross product, including its relation to areas

- the scalar triple product and its relation to volume
- the vector formula for torque
- how to find the parametric equations for a line in space
- how to find the equation for a plane in space
- how to find the line of intersection of two planes, the distance from a point to a plane, etc.