Chapter 11 Vectors and the Geometry of Space

Chapter Summary

11.1

- Write the component form of a vector.
- Perform vector operations and interrupt the results geometrically.
- Write a vector as a linear combination of standard unit vectors.
- Use vectors to solve problems involving force or velocity.

11.2

- Understand the three-dimensional rectangular coordinate system.
- Analyze vectors in space.
- Use three-dimensional vectors to solve real-life problems.

11.3

- Use properties of the dot product of two vectors.
- Find the angle between two vectors using the dot product.
- Find the direction cosines of a vector in space.
- Find the projection of a vector onto another vector.
- Use vectors to find the work done by a constant force.

11.4

- Find the cross product of two vectors in space.
- Use the triple scalar product of three vectors in space.

11.5

- Write a set of parametric equations for a line in space.
- Write a linear equation to represent a plane in space.
- Sketch the plane given by a linear equation.
- Find the distances between points, planes, and lines in space.

11.6

- Recognize and write equations for cylindrical surfaces.
- Recognize and write equations for quadratic surfaces.
- Recognize and write equations for surfaces of revolution.

11.7

- Use cylindrical coordinates to represent surfaces in space.
- Use spherical coordinates to represent surfaces in space.