

## **Chapter 8 Dynamics**

### **KEY TERMS AND DEFINITIONS**

#### **acceleration**

The derivative of the velocity of an element with respect to time

#### **angular acceleration**

The derivative of the angular velocity of an element with respect to time

#### **curvature**

The scalar quantity of a path of movement such that its product with the unit vector normal to the path is the ratio of the change in the unit vector tangent to the path to the change in distance along the path

#### **impulse**

With respect to a force, the time rate of change of momentum of a system

#### **kinetic energy**

The scalar product of half the mass of a particle and the square of the magnitude of its velocity

#### **linear momentum**

The product of the mass of an element or system and the velocity of the element or the center of mass of the system

#### **power**

The time rate of change of work

#### **radius of curvature**

The reciprocal of the curvature of a path

#### **translation**

A type of movement in which all points of a rigid body have the same velocity and the angular velocity of the body with respect to a fixed line of reference is zero

#### **velocity**

The derivative of the position vector from a point of reference to a point with respect to time

#### **work**

The integral of the product of a tangent force on a particle and the particle's change of position