

## Exercise 4

The angular velocity  $\mathbf{W}$  of a rotating solid body is a vector whose magnitude is the rate of angular displacement (radians per second) and whose direction is that in which a right-handed screw would advance if turned in the same direction. The position vector  $\mathbf{r}$  of a point is the vector from the origin of coordinates to the point. Show that the velocity of any point in a rotating solid body is  $\mathbf{v} = [\mathbf{W} \times \mathbf{r}]$ , relative to an origin located on the axis of rotation.