A model of the path of two asteroids following a collision is given in terms of vectors.
The velocity of asteroid R is given by \( \mathbf{r} = 5 \mathbf{i} + 3 \mathbf{j} - 2 \mathbf{z} \) m/s
The velocity of asteroid S is given by \( \mathbf{r} = -2 \mathbf{i} - 2 \mathbf{j} + 7 \mathbf{z} \) m/s

(a) Calculate the exact speed of each asteroid
(b) After 5 seconds, how much further (to the nearest metre) has S travelled than R?
(c) Calculate the angle between the asteroids’ paths to the nearest degree
(d) Comment on the suitability of the model.