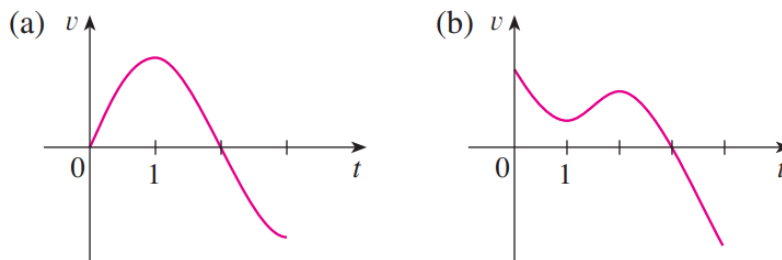## Exercise 5

Graphs of the *velocity* functions of two particles are shown, where t is measured in seconds. When is each particle speeding up? When is it slowing down? Explain.

Solution

A particle speeds up when both the velocity and its slope are positive or both the velocity and its slope are negative. A particle slows down when the velocity is positive and its slope is negative or vice-versa.

Part (a)

The particle is speeding up on $0 < t < 1$ and $2 < t < 3$, and the particle is slowing down on $1 < t < 2$.

Part (b)

The particle is speeding up on $1 < t < 2$ and $3 < t < 4$, and the particle is slowing down on $0 < t < 1$ and $2 < t < 3$.