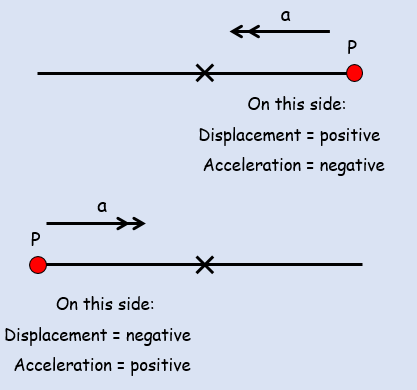
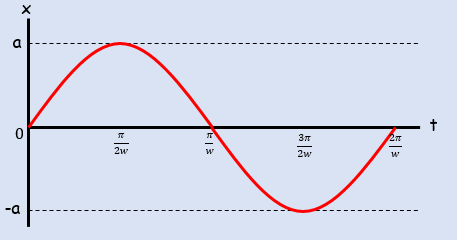
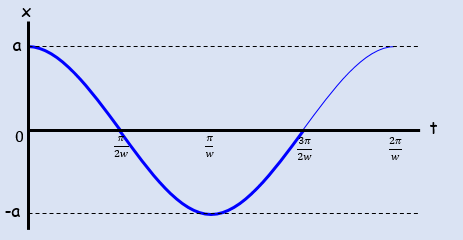
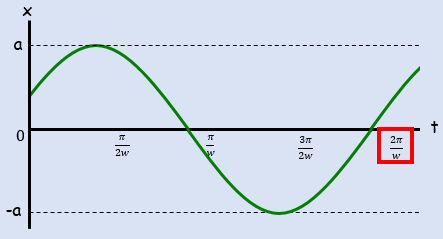
**8B Simple Harmonic Motion**









1. A particle is moving along a straight line. At time seconds its displacement, from a fixed point is such that:

Given that at , and that the particle is moving with velocity :

1. Find an expression for the particle’s displacement after seconds
2. Determine the maximum displacement of the particle from .
3. A particle is attached to the ends of two identical elastic springs. The free ends of the springs are attached to two points and . The point lies between and such that is a straight line and . The particle is held at and then released from rest.

At time seconds, the displacement of the particle from is and its velocity is . The subsequent motion can be described by the differential equation .

1. Describe the motion of the particle
2. Given that when , and , find as a function of
3. State the period of the motion and state the maximum speed of .