a Simple harmonic motion is represented by x(t)=a cos(omega)t obtain expression for velocity and accel;eration of the oscillationr Also plot thevtime variation of displacement, velocity & acceleration of the oscillator.

Solution

The displacement in the case of harmonic motion is given by
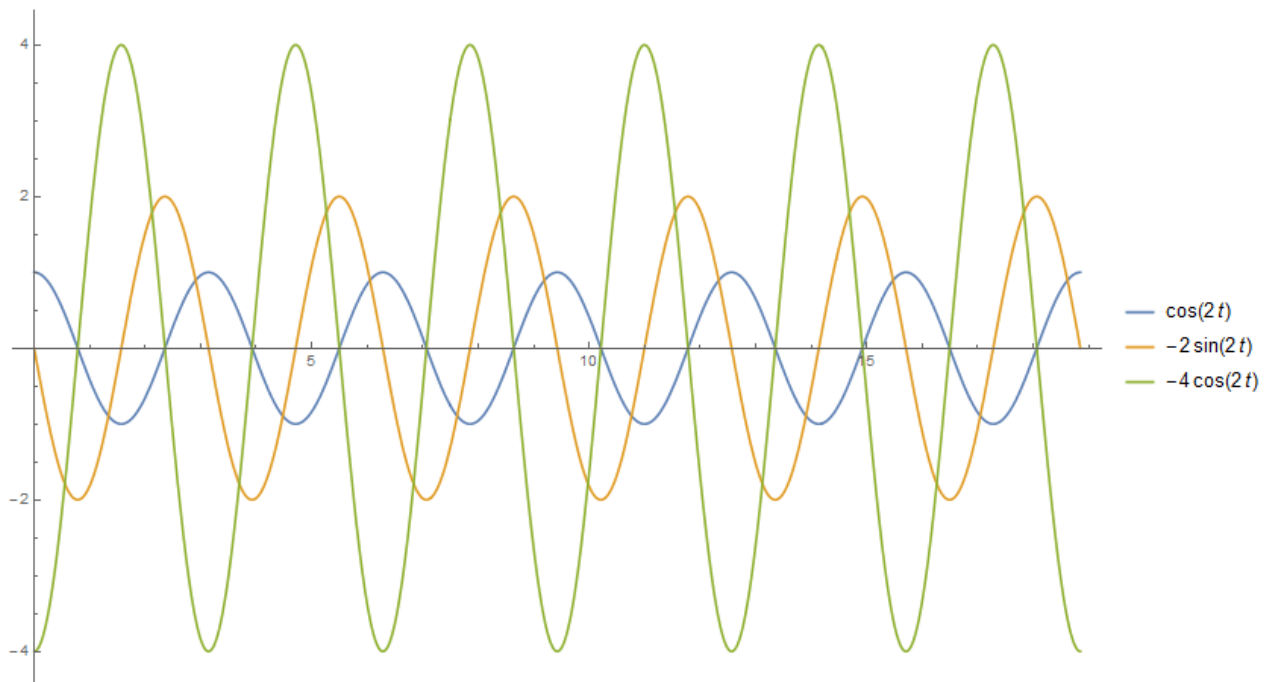
$$x(t) = a\ cos\omega\ t.$$

The velocity

$$v(t) = x'(t) = -a\ \omega\ sin\omega\ t.$$

The acceleration

$$a(t) = v'(t) = -a\ \omega^2\ cos\omega\ t$$

Let a=1, ω =2