Name:	ID:	Date:

1. Suppose $x = A\omega cos(-\omega t + \delta)$. Find out the velocity and acceleration. Draw acceleration graph with naming axis label.

2. Find out the leading and lagging output of the graph.
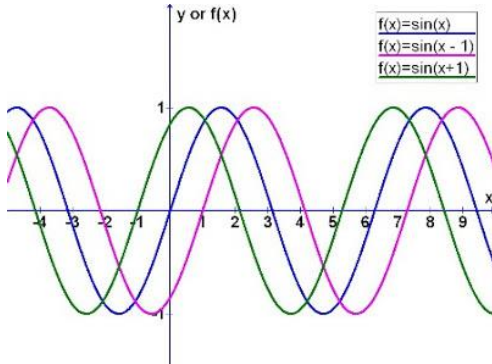
3. Draw (i) the phase difference of two waves for $\delta = 180°$ and (ii) and $\delta = -45°$.

4. A particle executes simple harmonic motion given by the equation $y = 12\sin(\frac{3\pi t}{10} + \frac{\pi}{4})$. Find out (i) amplitude, (ii) frequency, (iii) displacement at t= 1.25s, (iv) velocity at t= 2.5s, and (v) acceleration at t=3s.

5. For the simple harmonic oscillation where k = 19.6 N/m, A = 0.5 m, x = -0.5 m sin 0.08t, determine (a) the total energy, (b) the kinetic and potential energies as a function of time when the particle mass is 0.03 m from equilibrium position, and (c) maximum velocity.