Topic - Addition/Composition of two SHM in a straight line :-

When a particle is influenced by a number of collinear simple harmonic vibration of different amplitude and different epoch angle, the Resultant vibration can be obtain by the polygone method.

In the figure OP, PQ, and QR are the vectors representation three simple harmonic vibrations. The amplitude of the individual vibrations are a_1, a_2, and a_3 and δ_1, δ_2 and δ_3 are the corresponding epoch angles. The vector OR represent the resultant vibrations. The amplitude and the epoch angle of the resultant vibrations are A & ϕ respectively.

Fig : ①