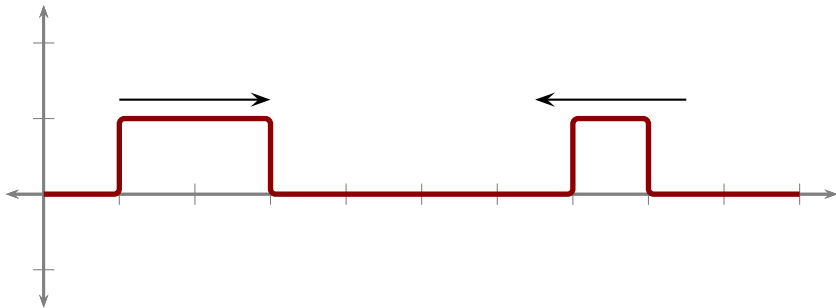
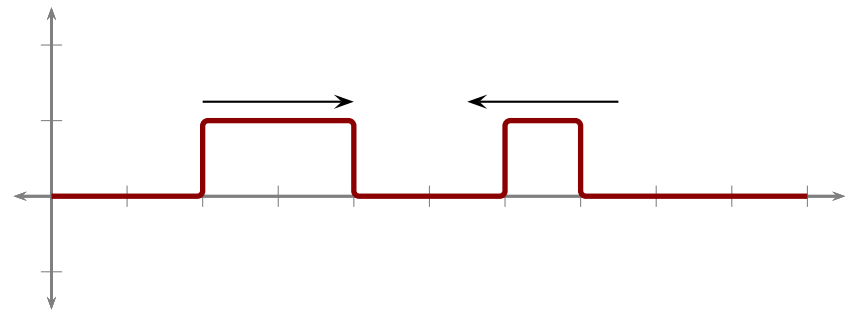


Interference of Pulses

A snapshot of a string at $t = 0$ s displays two pulses traveling toward each other. The horizontal units are cm. Suppose that the pulses travel with speed 1 cm/s.

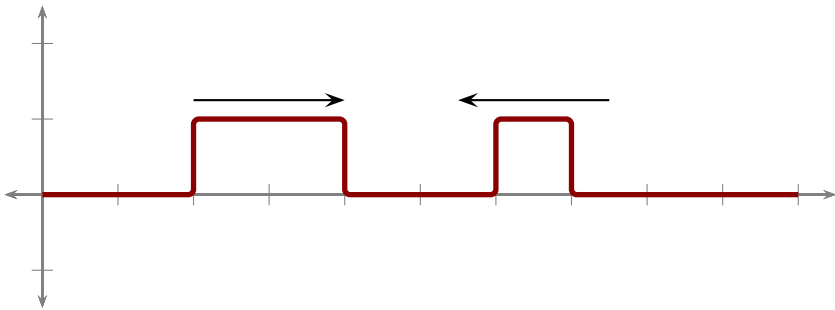


At $t = 1$ s the pulses appear as:

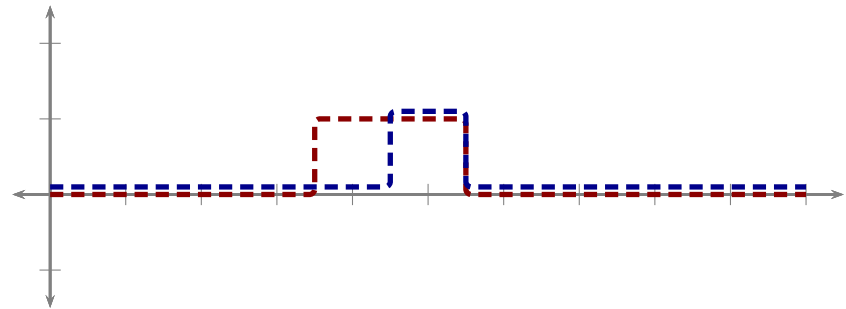


Interference of Pulses

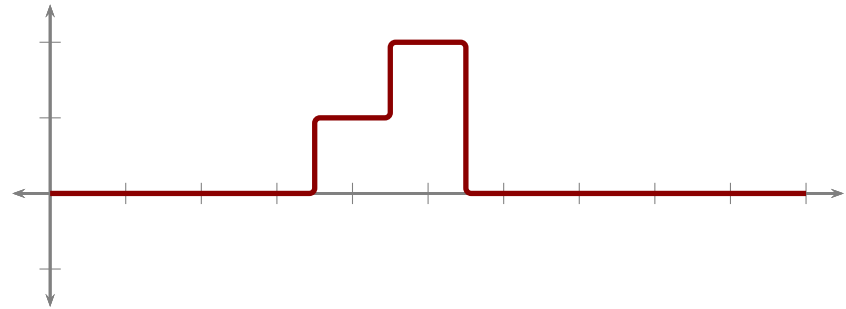
A snapshot of a string at $t = 1$ s is as follows.



At $t = 2.5$ s the individual pulses and their superposition appear as:

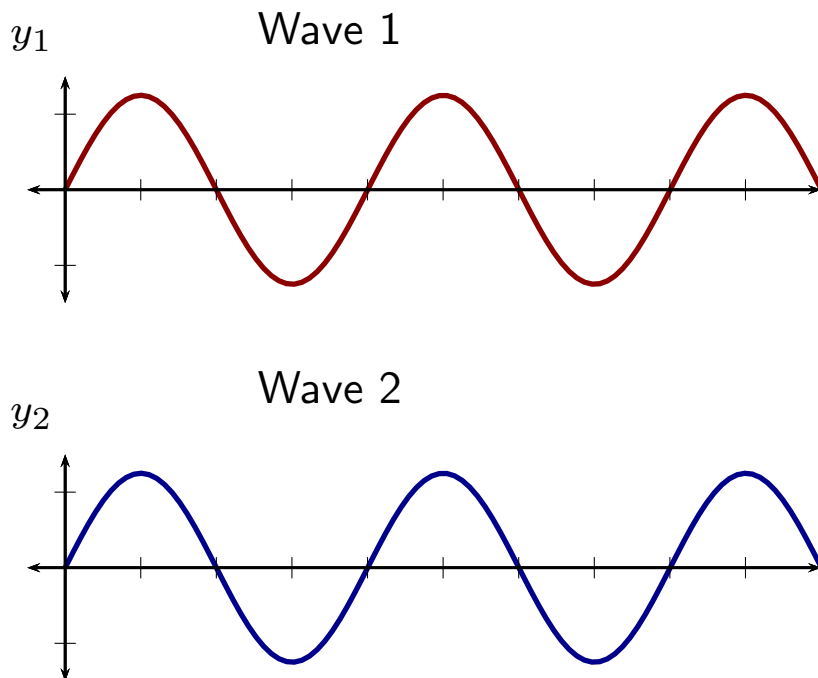


Add to give:

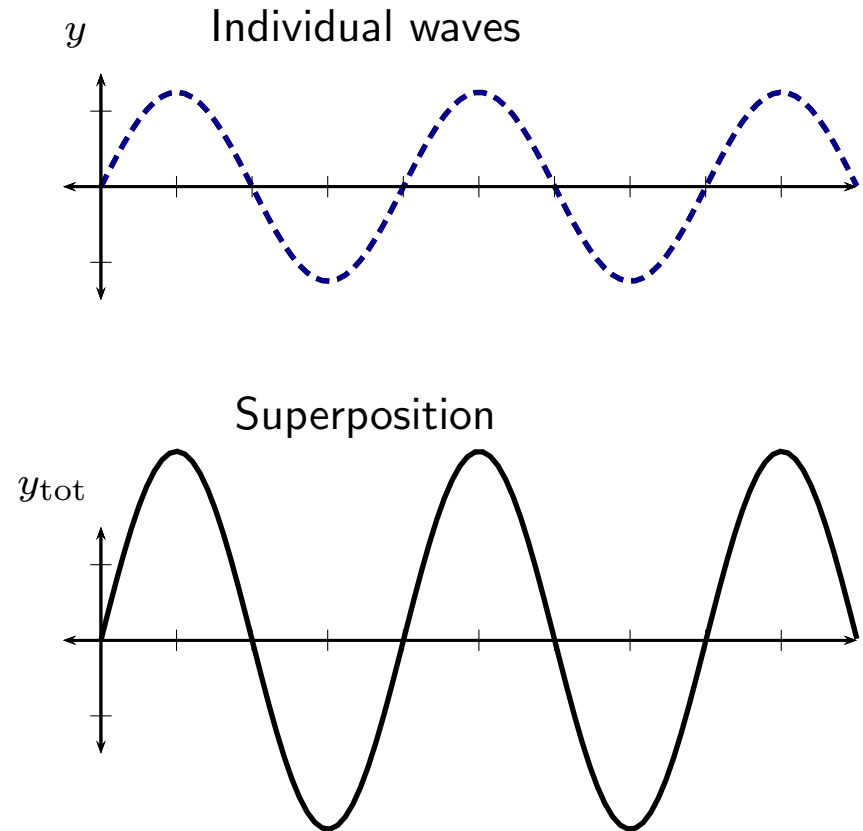


General Interference I

Snapshots of two waves at one instant are illustrated.

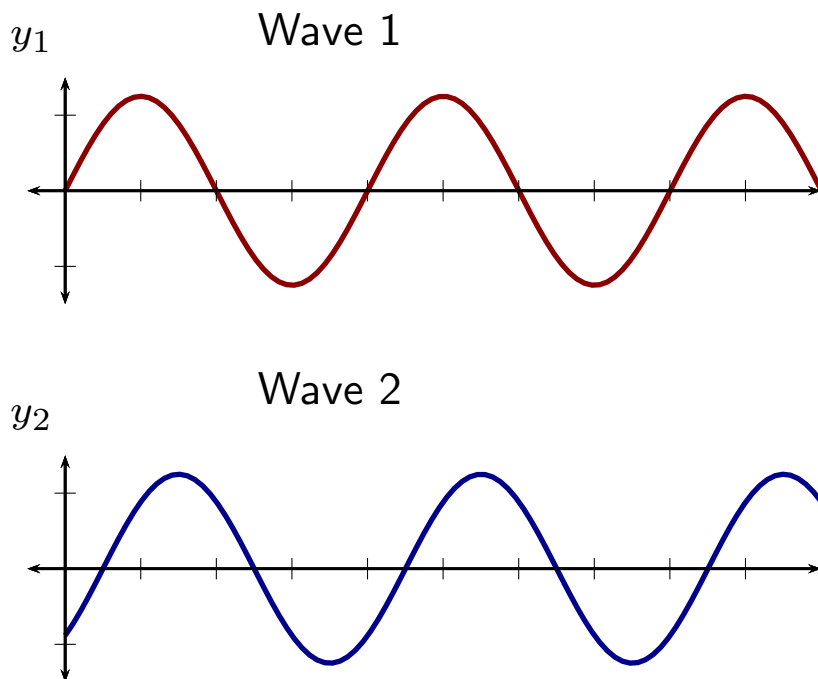


The superposition of the two waves is:

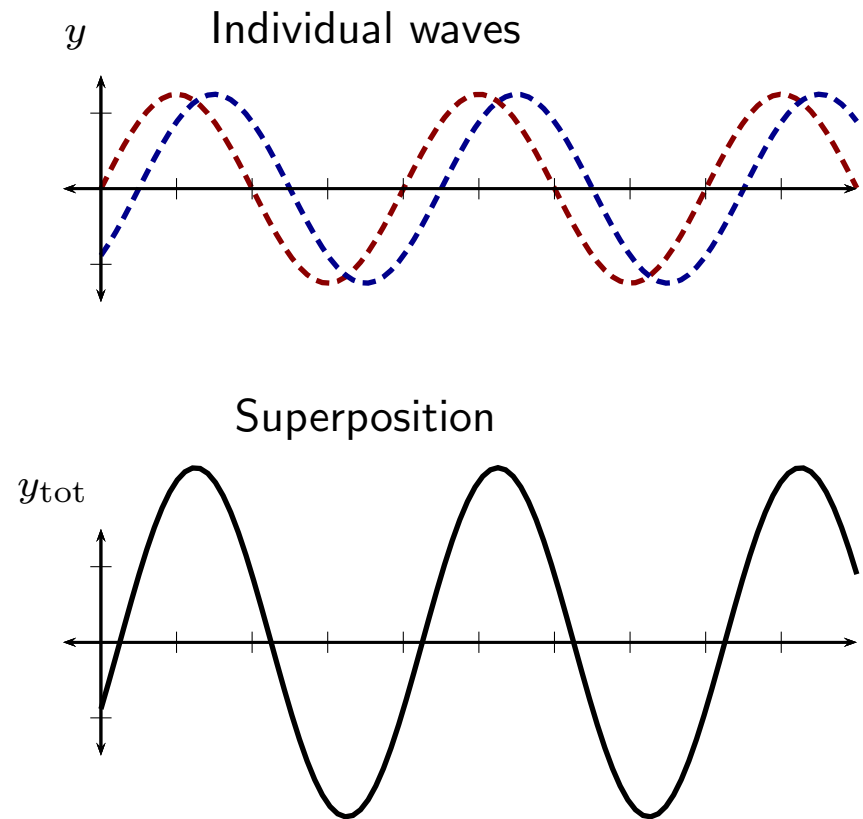


General Interference II

Snapshots of two waves at one instant are illustrated.

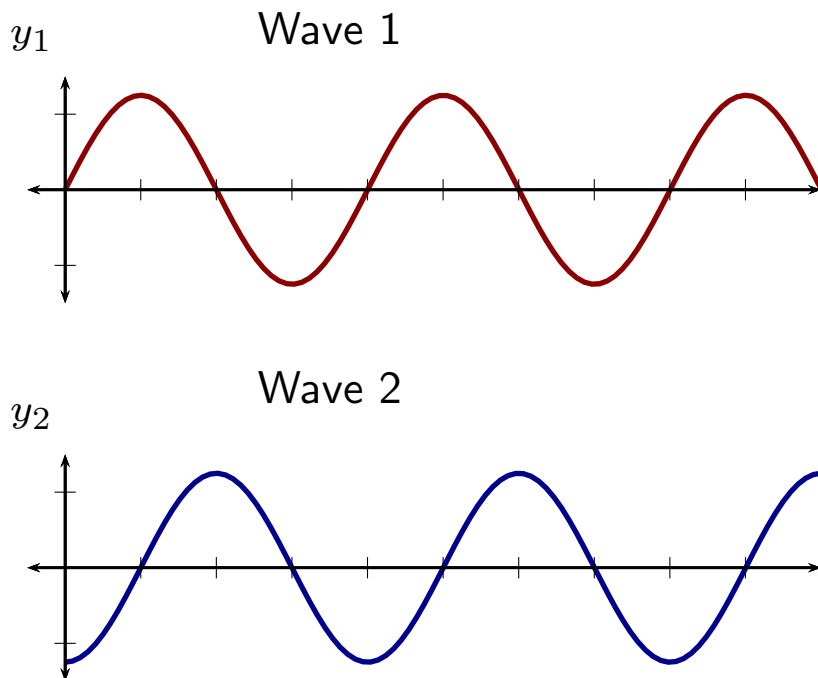


The superposition of the two waves is:

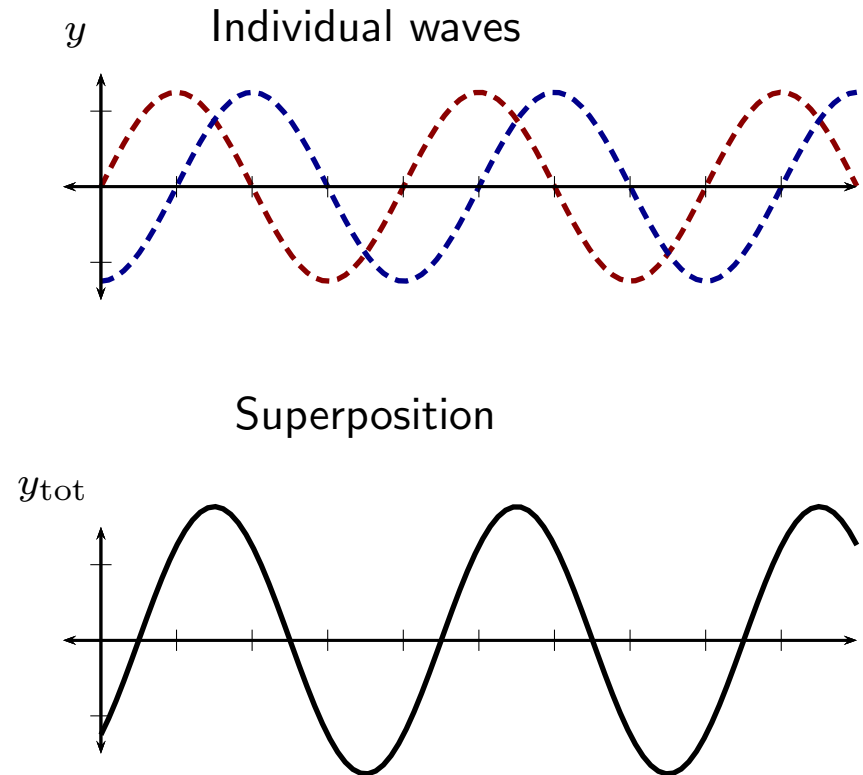


General Interference III

Snapshots of two waves at one instant are illustrated.

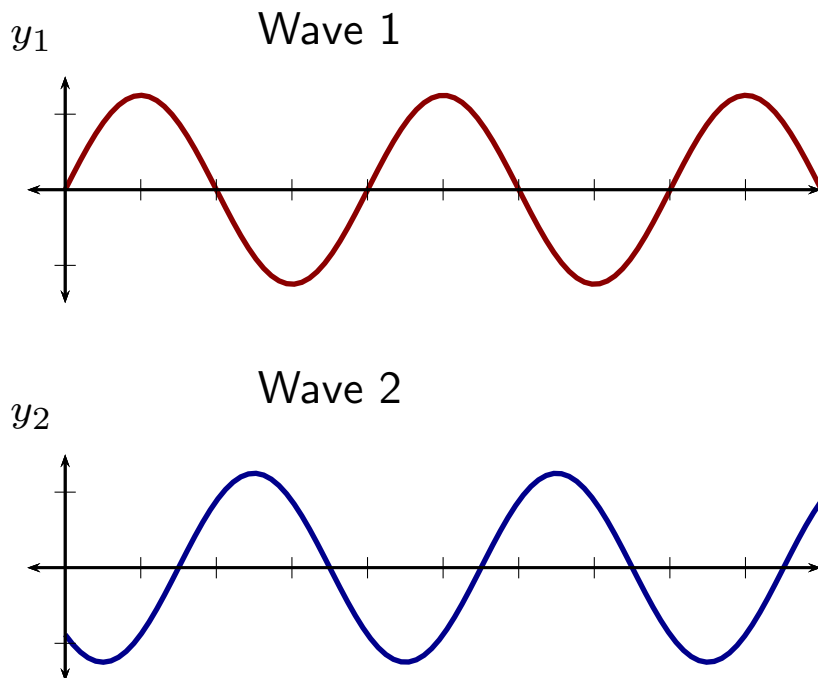


The superposition of the two waves is:

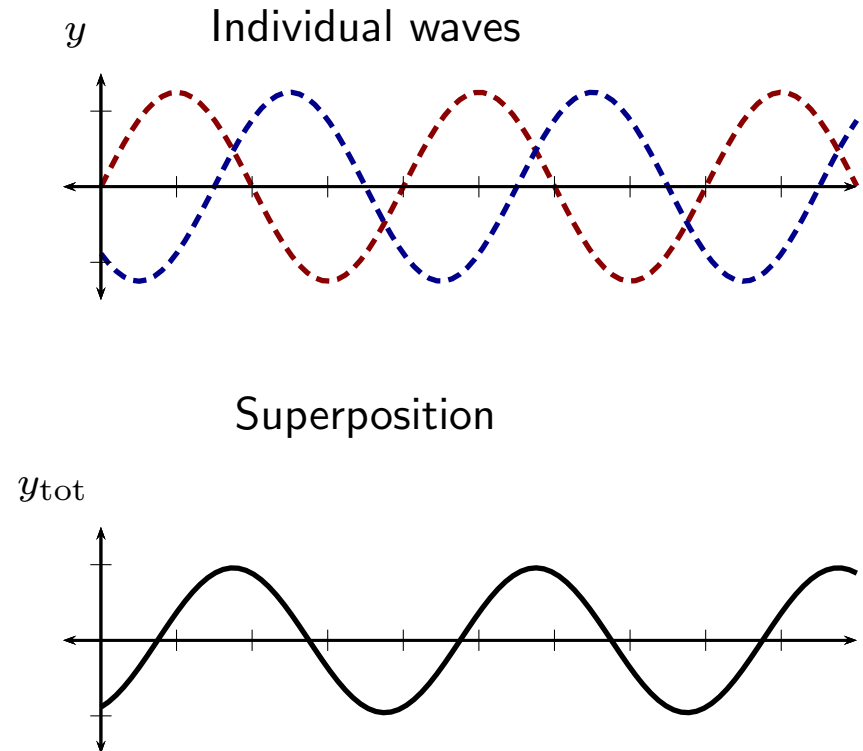


General Interference IV

Snapshots of two waves at one instant are illustrated.

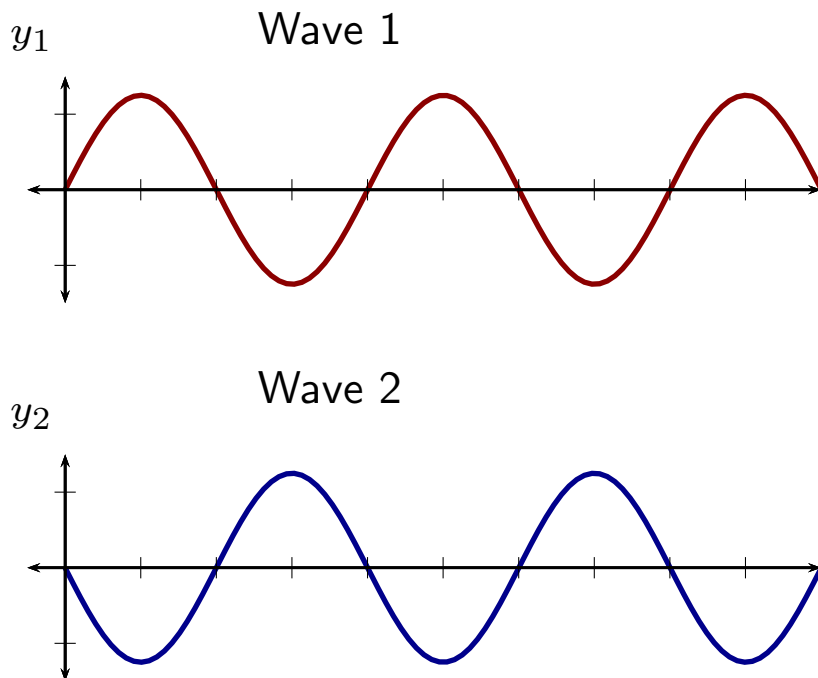


The superposition of the two waves is:

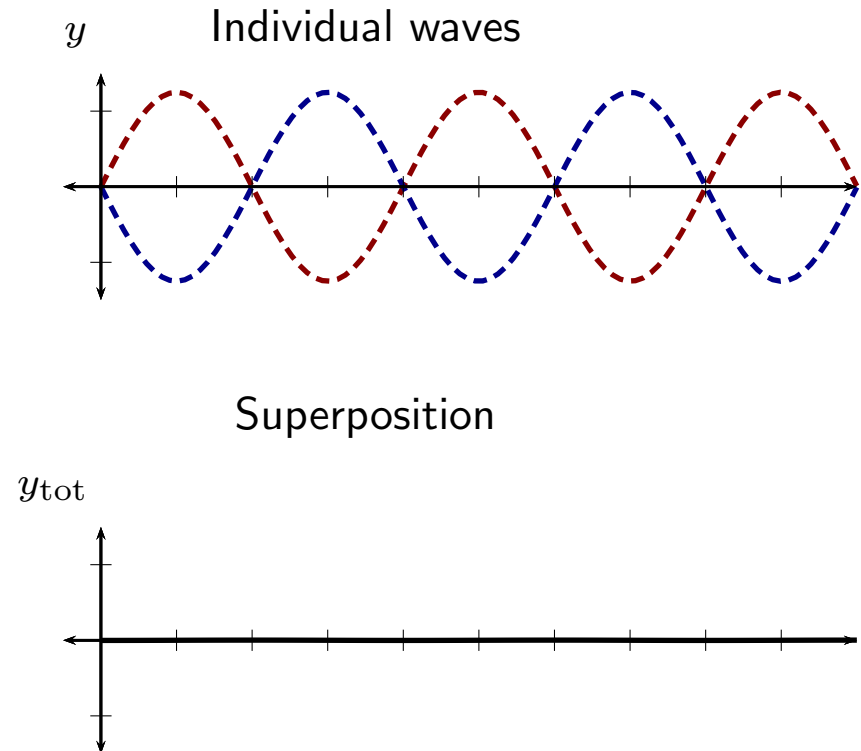


General Interference V

Snapshots of two waves at one instant are illustrated.



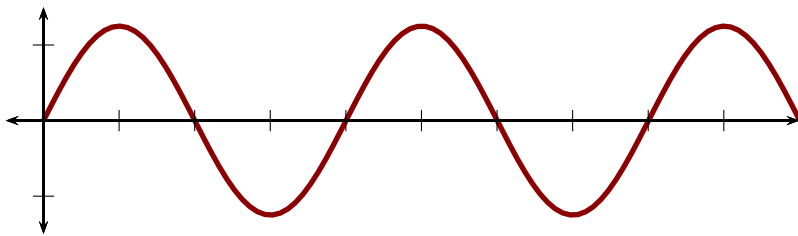
The superposition of the two waves is:



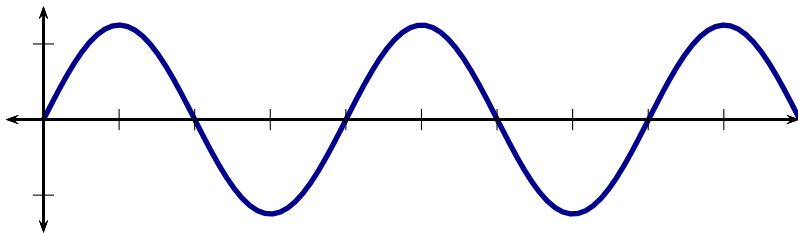
Constructive Interference

Snapshots of two waves in the same medium at one instant. The waves “match” perfectly.

Wave 1

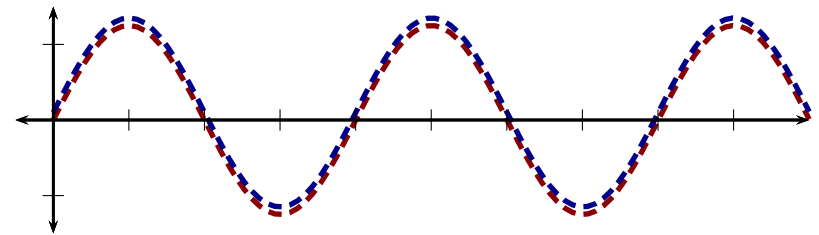


Wave 2

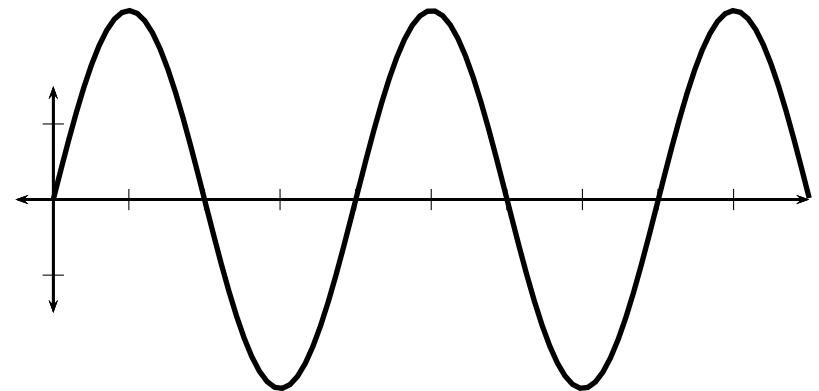


The combination of the two waves produces *constructive interference*.

Individual waves



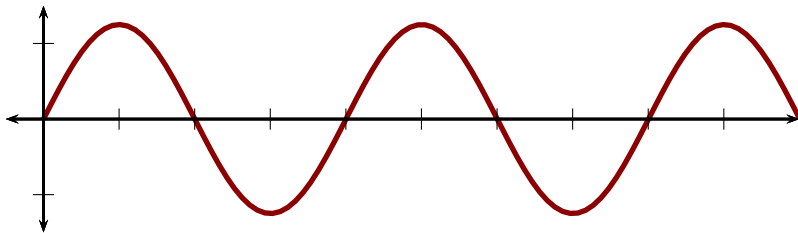
Combination



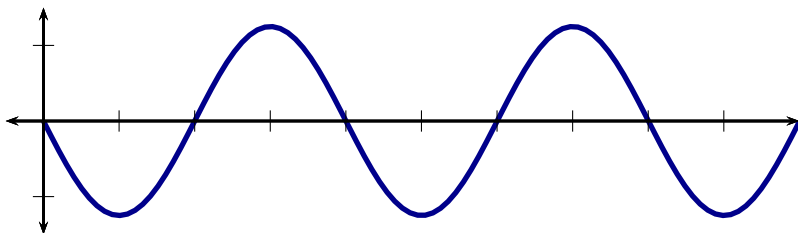
Destructive Interference

Snapshots of two waves in the same medium at one instant. The waves are completely opposite to each other.

Wave 1

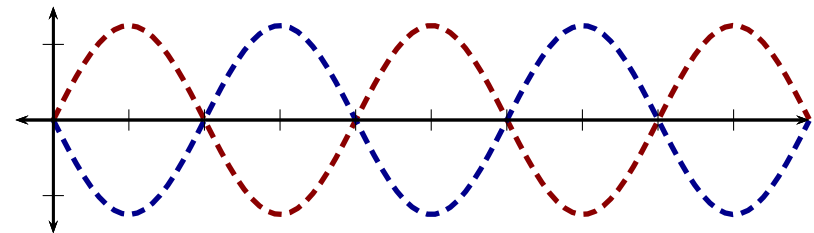


Wave 2

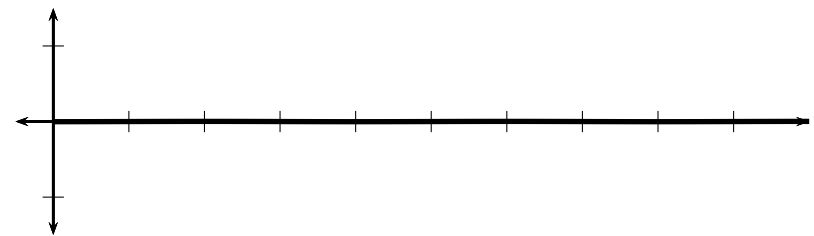


The combination of the two waves produces *destructive interference*.

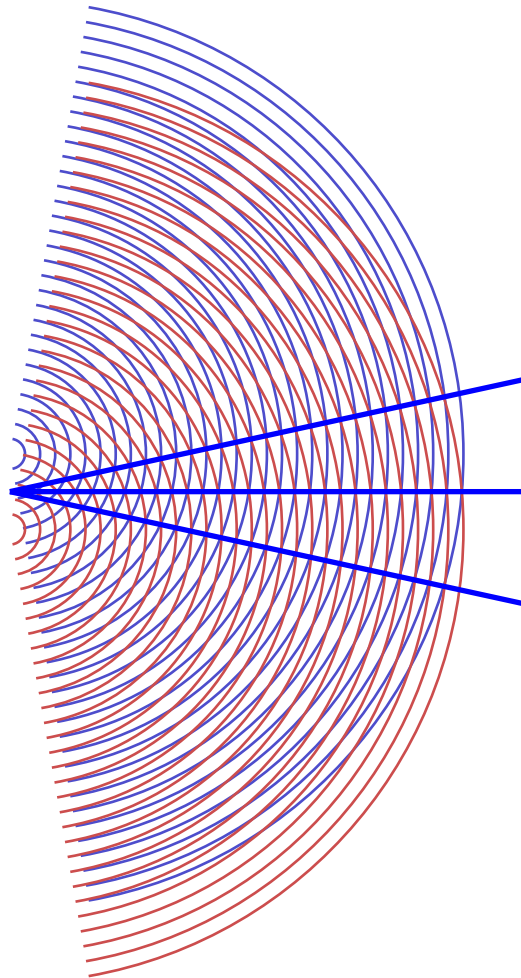
Individual waves



Combination



Overlapping Water Waves



Straight lines indicate points along which constructive interference occurs.