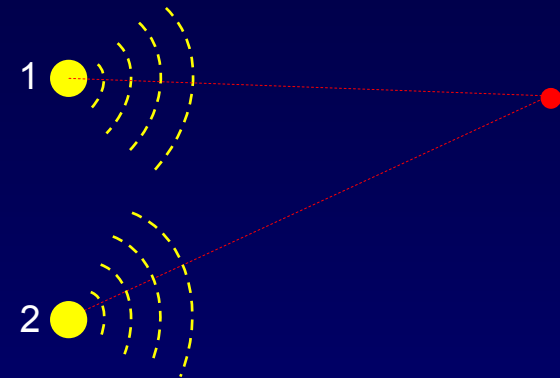
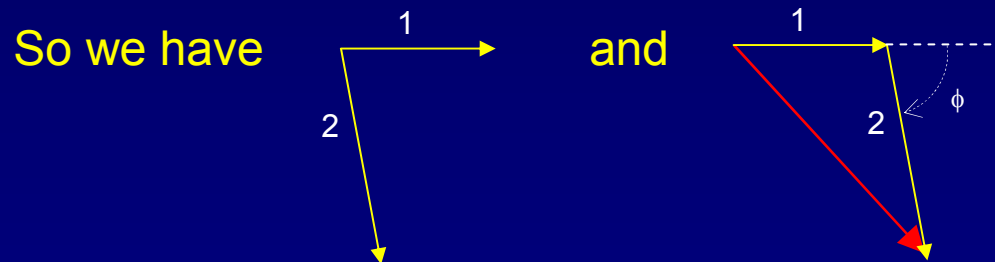


Solution

Suppose the intensity of speaker 2 is twice that of speaker 1. Everything else is the same as in the previous exercise. Draw the phasor diagram that describes this situation.



The phase difference is unchanged: $\phi = 83.7^\circ$.
Now, the length of phasor 2 is $\sqrt{2}$ larger.
(Remember that phasors are amplitudes.)



Note that the algebraic solution we wrote before does not apply here, because the amplitudes aren't equal. You can use some trigonometry to calculate the length of the third side of the triangle.

$$\text{Law of cosines: } c^2 = a^2 + b^2 + 2ab \cos\phi = 1 + 2 + 2\sqrt{2} \times 0.11 = 3.31 \quad (c = 1.82)$$