

23. The phasor diagram is shown below. Here $E_1 = 1.00$, $E_2 = 2.00$, and $\phi = 60^\circ$. The resultant amplitude E_m is given by the trigonometric law of cosines:

$$E_m^2 = E_1^2 + E_2^2 - 2E_1E_2 \cos(180^\circ - \phi) .$$

Thus,

$$E_m = \sqrt{(1.00)^2 + (2.00)^2 - 2(1.00)(2.00) \cos 120^\circ} = 2.65 .$$

