PROBLEM:

Solve the following simultaneous equations by using a method based on complex amplitudes. Show how to convert the sinusoidal equations into complex-number equations. If we assume that the amplitudes are positive, will the answers for M_1 and M_2 be unique? How about ψ_1 and ψ_2; are there other answers for the phases?

$$\begin{aligned} \cos(1.5\pi t + 4\pi) &= M_1 \cos(1.5\pi t + \psi_1) + M_2 \cos(1.5\pi t + \psi_2) \\ 3\sqrt{2}\cos(1.5\pi t - 3\pi/4) &= M_1 \cos(1.5\pi t + \psi_1) - M_2 \cos(1.5\pi t + \psi_2) \end{aligned}$$