Method for Impedance Analysis of Circuits with Phasors:

1. Replace all passive components with equivalent impedance
    a. $Z_C = \frac{1}{j\omega C}$
    b. $Z_L = j\omega L$
    c. $Z_R = R$
2. Replace all sources with phasor
    a. E.g. $v(t) = A\cos(\omega t + \phi) \Longrightarrow \hat{v} = Ae^{j\phi}$, or in shorthand $A\angle\phi$
3. Solve circuit using Ohm's Law of Impedances for phasors: $\hat{v} = \hat{\imath}Z$
    a. Impedances may be combined just like resistors. In series $Z_{eq} = Z_1 + \cdots + Z_n$, and in parallel, $\frac{1}{Z_{eq}} = \frac{1}{Z_1} + \cdots + \frac{1}{Z_n}$
        i. Yes, two impedance which add to zero really result in a short
    b. Node voltage works exactly like you'd expect
        i. All node voltages will end up being the weighted sum of the original source phasors multiplied by some complex number, e.g. $\hat{V}_a(t) = Q_1\hat{v}_1 + Q_2\hat{v}_2$, where Q_1 and Q_2 are complex, and $\tilde{v}_1$ and $\tilde{v}_2$ are the two voltage sources you started with
        ii. Output $V_a(t)$ is just $\left|\hat{V}_a\right|\cos\left(\omega t + \angle\hat{V}_a\right)$

Method for Impedance Analysis of Circuits without Phasors [this is included just to give a feeling for why the whole Phasor idea works. You will never actually use this algorithm]:

1. Replace all passive components with equivalent impedance
    a. $Z_C = \frac{1}{j\omega C}$
    b. $Z_L = j\omega L$
    c. $Z_R = R$
2. Replace all sources with complex exponentials
    a. E.g. $v(t) = A\cos(\omega t + \phi) \Longrightarrow \tilde{v}(t) = Ae^{j(wt+\phi)}$
3. Solve circuit using Ohm's Law of Impedances for complex exponential sources: $\tilde{v}(t) = \tilde{\imath}(t)Z$
    a. Impedances may be combined just like resistors. In series $Z_{eq} = Z_1 + \cdots + Z_n$, and in parallel, $\frac{1}{Z_{eq}} = \frac{1}{Z_1} + \cdots + \frac{1}{Z_n}$
        i. Yes, two impedance which add to zero really result in a short
    b. Node voltage works exactly like you'd expect
        i. All node voltages will end up being the weighted sum of the original sources multiplied by some complex number, e.g. $\tilde{V}_a(t) = Q_1\tilde{v}_1(t) + Q_2\tilde{v}_2(t)$, where Q_1 and Q_2 are complex, and $\tilde{v}_1(t)$ and $\tilde{v}_2(t)$ are the two voltage sources you started with
        ii. Real part of $\tilde{V}_a(t)$ gives true output $V_a(t)$ (i.e. response to the original cosine source)