Parallel RC circuit

a. $\Delta V_R(t) = i_R(t)R$, so $i_R(t) = \dfrac{\mathcal{E}(t)}{R} = \dfrac{\mathcal{E}_m}{R}\sin(\omega t)$.

b. $C = \dfrac{q(t)}{\Delta V_C(t)}$, so $q(t) = C\mathcal{E}(t) = C\mathcal{E}_m \sin(\omega t)$.

c. $i_C(t) = \dfrac{dq(t)}{dt}$, so $i_C(t) = \omega C\mathcal{E}_m \cos(\omega t) = \dfrac{\mathcal{E}_m}{X_C}\cos(\omega t)$.

d. $i_G(t) = i_C(t) + i_R(t)$, so $i_G(t) = \mathcal{E}_m \left(\dfrac{1}{R}\sin(\omega t) + \dfrac{1}{X_C}\cos(\omega t)\right)$.
If you play around with trig formulas, you'll find that this is the same as

$$i_G(t) = \mathcal{E}_m \sqrt{\frac{1}{R^2} + \frac{1}{X_C^2}}\sin(\omega t + \phi) \qquad \text{where} \qquad \tan\phi = \frac{R}{X_C}.$$

Grading: 2 points for free; 2 points for each part. The "play around with trig formulas" mentioned in part (d.) is not required.