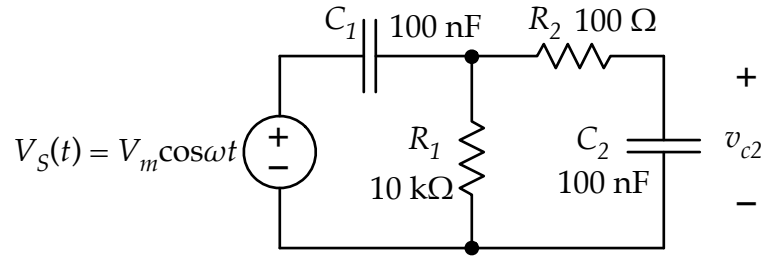Use AC analysis to find the complex voltage for v_{C2} shown in the circuit at right for frequencies of $\omega = 10^3$ rad/s, 10^4 rad/s, and 10^5 rad/s. The amplitude of the sinusoidal source is 10 V. Express the answers in magnitude/phase form.

$V_S(t) = V_m \cos\omega t$

C_1 100 nF R_2 100 Ω

R_1 10 kΩ C_2 100 nF $+ \; v_{c2} \; -$

$\omega = 10^3$ rad/s : $\tilde{\mathbf{V}}_{\mathbf{C2}} =$ _____

$\omega = 10^4$ rad/s : $\tilde{\mathbf{V}}_{\mathbf{C2}} =$ _____

$\omega = 10^5$ rad/s : $\tilde{\mathbf{V}}_{\mathbf{C2}} =$ _____

Write your answers — and whatever work will fit — on this sheet. Staple any sheets with additional work behind.