12. For the circuit below, the current source is turned on at \( t = 0 \). Determine \( V_{C1} \) and \( V_{C2} \) after 100 ms.

\[ C_1 \quad \text{and} \quad C_2 \text{ are in series so they have the same current flowing through both of them. Thus} \]

\[ I_{C1} = C_1 \frac{dv}{dt} \]

\[ 1001 \times 10^{-6} \frac{dv}{0.1} \]

\( dv = 100V \); since \( C_1 + C_2 \) has no stated initial voltage, at the end of 100 ms \( \underline{C_1 = 100V} \)

\[ I_{C2} = C_2 \frac{dv}{dt} \]

\[ 1001 \times 5 \times 10^{-6} \frac{dv}{0.1} \]

\( dv = 20V \); so at 100 ms \( \underline{V_{C2} = 20V} \)