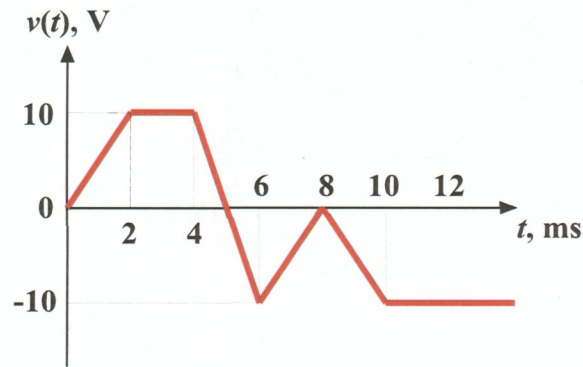


EE 2240  
**Problem #06**

The voltage across a  $10\mu\text{F}$  capacitor is shown. Determine and accurately sketch the current waveform.



$$i(t) = C \frac{dv}{dt}$$

$$\frac{dv}{dt} = \begin{cases} \frac{10\text{V}}{2\text{ms}} & : 0 < t < 2\text{ms} \\ 0 & : 2\text{ms} < t < 4\text{ms} \\ -\frac{20\text{V}}{2\text{ms}} & : 4\text{ms} < t < 6\text{ms} \\ \frac{10\text{V}}{2\text{ms}} & : 6\text{ms} < t < 8\text{ms} \\ -\frac{10\text{V}}{2\text{ms}} & : 8\text{ms} < t < 10\text{ms} \\ 0 & : 10\text{ms} < t \end{cases} \quad , \quad C \frac{dv}{dt} = \begin{cases} 50\text{mA} & : 0 < t < 2\text{ms} \\ 0 & : 2\text{ms} < t < 4\text{ms} \\ -100\text{mA} & : 4\text{ms} < t < 6\text{ms} \\ 50\text{mA} & : 6\text{ms} < t < 8\text{ms} \\ -50\text{mA} & : 8\text{ms} < t < 10\text{ms} \\ 0 & : 10\text{ms} < t \end{cases}$$

