Chapter 6, Solution 85.

It is evident that differentiating i will give a waveform similar to v. Hence,

$$v = L\frac{di}{dt}$$

$$i = \begin{cases} 4t, 0 < t < 1ms \\ 8 - 4t, 1 < t < 2ms \end{cases}$$

$$v = L\left[\frac{di}{dt} = \begin{cases} 4000L, 0 < t < 1ms \\ -4000L, 1 < t < 2ms \end{cases}\right]$$

But, $$v = \begin{cases} 5V, 0 < t < 1ms \\ -5V, 1 < t < 2ms \end{cases}$$

Thus, $4000L = 5 \longrightarrow L = 1.25$ mH in a **1.25 mH inductor**