108. (Third problem of **Cluster**)

(a) , (b) and (c) The area enclosed by the loop is that of a rectangle with one side (x) expanding. With $B_0 = 0.200$ T and $\xi = 0.050$ T/s (the rate of field increase), we have

$$\begin{aligned}\Phi &= BA = (B_0 + \xi t)\,(Lx) \\ &= B_0 Lvt + \xi Lvt^2\end{aligned}$$

where $x = vt$ has been used. Thus, from Faraday's and Ohm's laws, the induced current is

$$i = \frac{\mathcal{E}}{R} = \frac{B_0 Lv}{R} + 2\frac{\xi Lv}{R}\,t$$

and is counterclockwise (to produce field in the loop's interior pointing out of the page, "fighting" the increasing inward pointed flux due to the applied field). Therefore, the current at $t = 0$ is $B_0 Lv/R = 0.144$ A. And its value at $t = 1.00$ s is $(B_0 + 2\xi)Lv/R = 0.216$ A.