a) $i = \dfrac{2V}{2R_1 + R_2}$

b) $i_2 = \dfrac{V}{\frac{R_1}{2} + R_2}$

c) $i = 0$; $-VC$

a) $V(3H) - V\left(\frac{H}{3}\right) = -\dfrac{5}{18} \cdot \dfrac{Q}{\pi \varepsilon_0 H}$

b) $V(3H) - V\left(\frac{H}{3}\right) = -\dfrac{QH^2}{8\pi\varepsilon_0 H^3} + \dfrac{Q\,H^2/9}{8\pi\varepsilon_0 H^3} + \dfrac{Q}{4\pi\varepsilon_0 2H} -$

$- \dfrac{Q}{4\pi\varepsilon_0 H} + \dfrac{Q}{4\pi\varepsilon_0}\dfrac{1}{3H} - \dfrac{Q}{4\pi\varepsilon_0}\dfrac{1}{2H+T}$

a) $r<H$ $E = \dfrac{Qr}{2\pi\varepsilon_0 H^2 L}$ radially out

$r>H$ $E = \dfrac{1}{2\pi\varepsilon_0}\dfrac{Q}{L}\dfrac{1}{r}$ radially out

b) $\vec{E}_{tot} = \dfrac{1}{2\pi\varepsilon_0}\dfrac{Q}{L}\left(\dfrac{1}{W} - \dfrac{1}{D-W}\right)\vec{i}_x$

c)

$\frac{D}{2}$

a) $i_1 = \dfrac{V(HW-a)}{\rho_1 L}$, $E_1 = \dfrac{V}{L}$ to the right

b) $E_1 = \dfrac{V}{L}$ to the right

$E_2 = \dfrac{V}{L}$ to the right

$i = \dfrac{V}{L}\left(\dfrac{HW-a}{\rho_1} + \dfrac{a}{\rho_2}\right)$