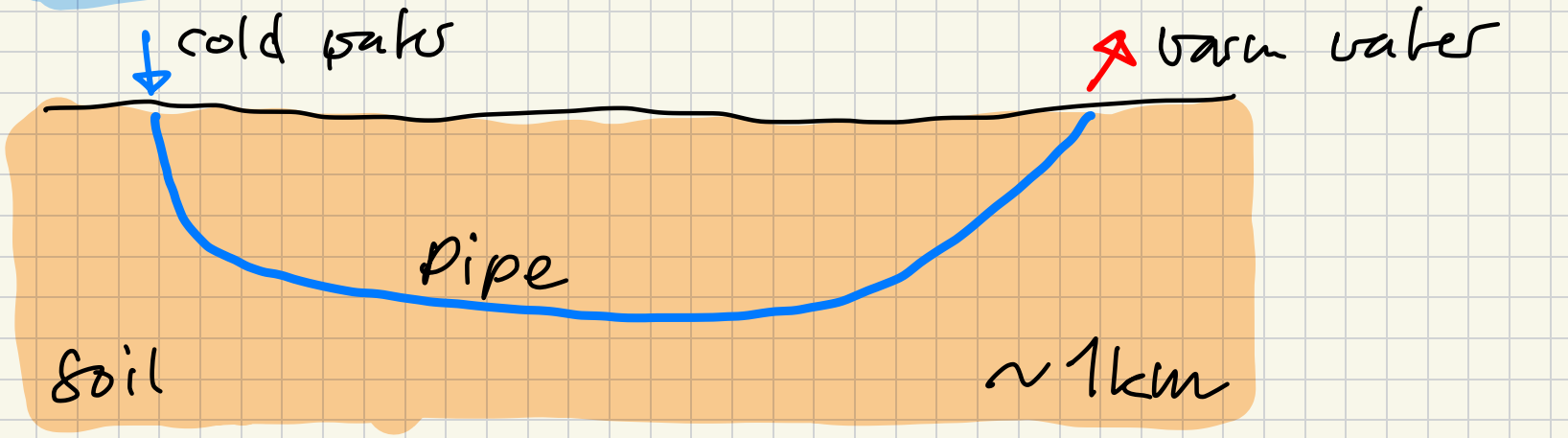
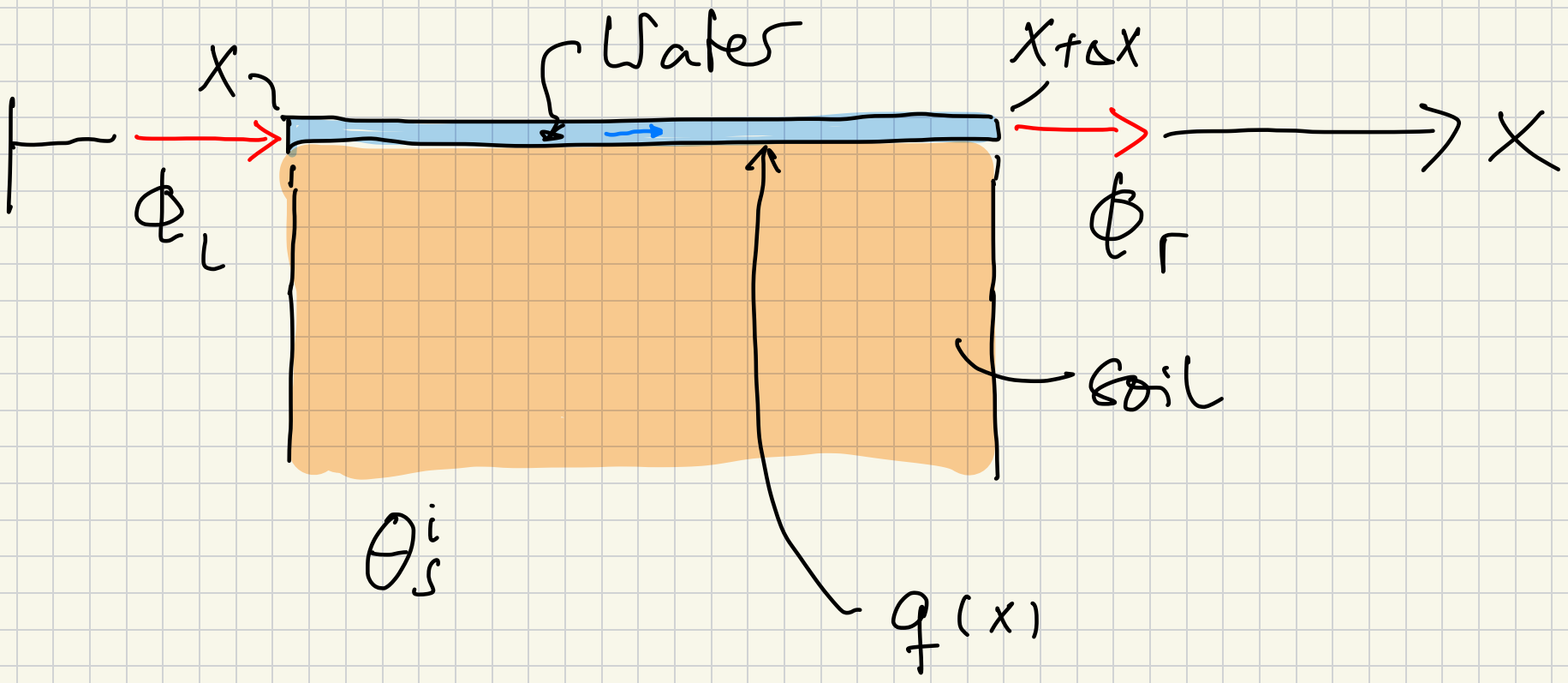
Heat transfer with pipe

Objective: Model large scale closed-loop



Problem to start with

- 2D
- Pipe on boundary



θ_s, θ_w soil and water temp. in K

$$q(x) = h \cdot (\theta_s(x) - \theta_w(x))$$

Heat transfer soil pipe in W/m

$$\phi_l = v \cdot A \cdot \rho \cdot c \cdot \theta_w(x)$$

$$\phi_r = v \cdot A \cdot \rho \cdot c \cdot \theta_w(x+\Delta x)$$

} Heat flow in W

TODO: Energy balance, diff. eq., weak form