LR-GRADIENT-DESCENT(θ_{init} , θ_{0init} , η , ϵ) $1 \quad \theta^{(0)} = \theta_{init}$ $\theta_0^{(0)} = \theta_{0init}$ 3 t = 04 repeat 5 t = t + 1 $\begin{array}{ll} 6 & \qquad \theta^{(t)} = \theta^{(t-1)} - \eta \left(\frac{1}{n} \sum_{i=1}^{n} \left(\sigma \left(\theta^{(t-1)^{\mathsf{T}}} x^{(i)} + \theta_{0}^{(t-1)} \right) - y^{(i)} \right) x^{(i)} + \lambda \theta^{(t-1)} \right) \\ 7 & \qquad \theta^{(t)}_{0} = \theta^{(t-1)}_{0} - \eta \left(\frac{1}{n} \sum_{i=1}^{n} \left(\sigma \left(\theta^{(t-1)^{\mathsf{T}}} x^{(i)} + \theta_{0}^{(t-1)} \right) - y^{(i)} \right) \right) \end{array}$ 8 until $\left| J_{lr}(\theta^{(t)}, \theta_0^{(t)}) - J_{lr}(\theta^{(t-1)}, \theta_0^{(t-1)}) \right| < \epsilon$ 9 **return** $\theta^{(t)}$, $\theta_0^{(t)}$