$$J(\theta) = \frac{1}{2}\sum_{i=1}^{m} w^{(i)} \left(\theta^T x^{(i)} - y^{(i)}\right)^2 = \frac{1}{2}(X\theta - \vec{y})^T W (X\theta - \vec{y})$$

$$\theta = (X^T W X)^{-1} X^T W \vec{y}$$

$$h_\theta(x) = \theta^T x$$