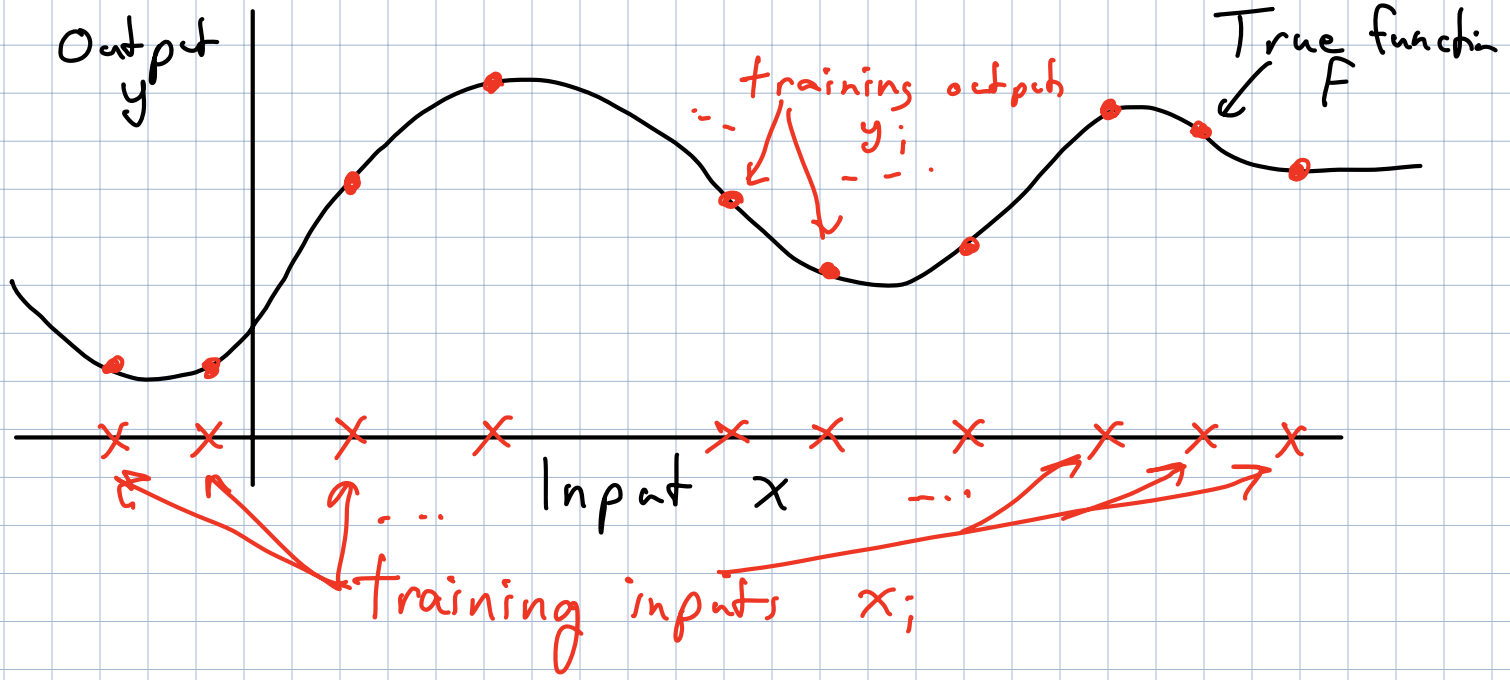
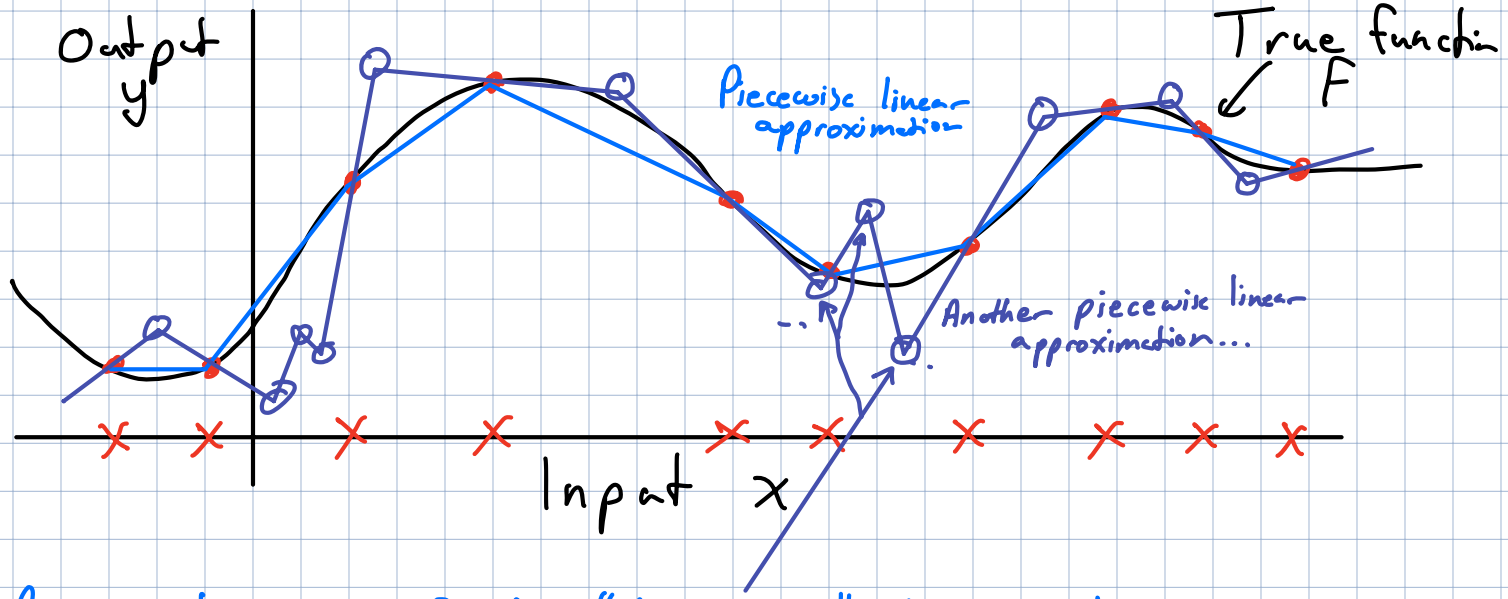
Recall:

Consider a function $f: \mathbb{R} \to \mathbb{R}$



Announcements

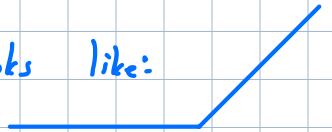
0) Do HW0
1) Discussions this week
   3-4 Wednesday
   4-5 "
   details at eecs182.org
2) We will expand.



Piecewise linear specified by "elbow locations", slopes, and overall vertical bias

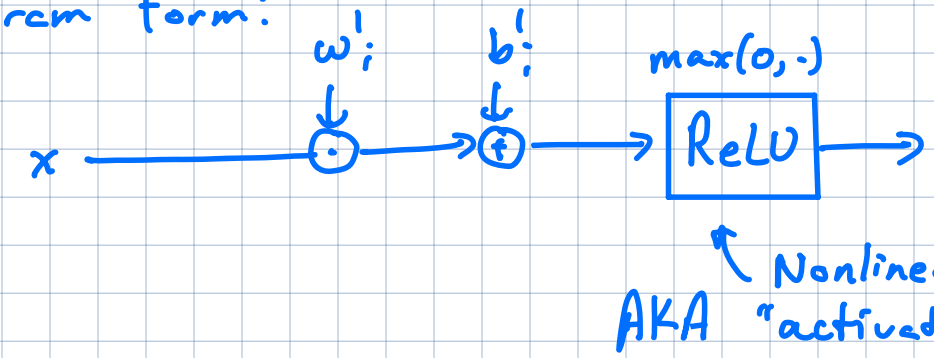
To parameterize, choose a form that's "linear-algebra friendly"

$b + \sum_i w_i g_{\theta_i}(x)$ where $g_{\theta_i}(x)$ looks like:



Can realize $g_{\theta_i}(x)$ as $\max(0, \underbrace{w_i' x + b_i'}_{\text{generic affine function}})$

In block diagram form:



Put things together as math:

$$b + \sum_{i=1}^{d} w_i \, \mathrm{ReLU}(w_i' x + b_i') = b^2 + W^2 \mathrm{ReLU}(W' x + \vec{b}')$$

(scalar)

or diagram: