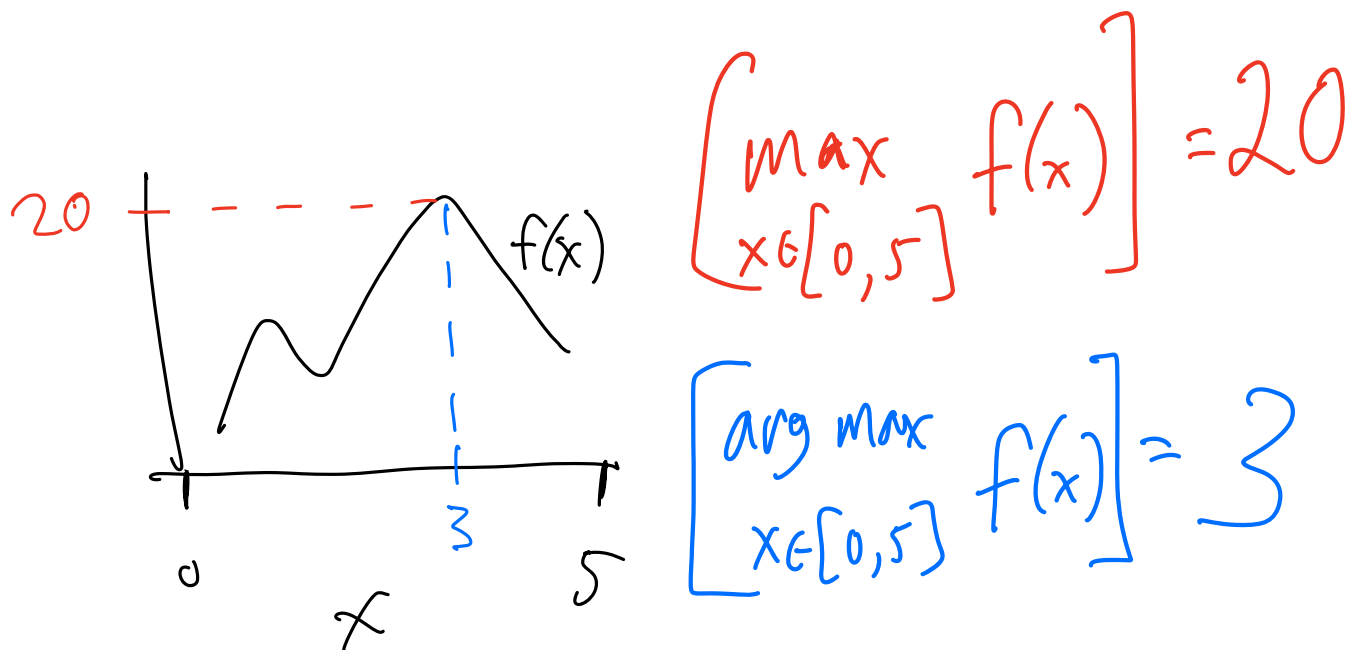


Max and Arg Max notation

9/20/23 based on 9/19 lecture



$\max_{x \in C} f(x)$: the highest value of $f(x)$ over all x from set C .

$$= \max \{ f(x) \mid x \in C \}$$

$\text{arg max}_{x \in C} f(x)$: the $x^* \in C$ that maximizes $f(x)$.

For classification prediction, set C is a finite discrete set.....

Discrete $y \in C$

$$C = \{ \text{POS}, \text{NEG} \}$$

Say $f(y) = \text{posterior prob of } y = p(y) p(\text{doc} | y) / p(\text{doc})$

We do the calculation and get

$$f(\text{POS}) = -3.2$$

$$f(\text{NEG}) = -4.9$$

Then:

$$\max_{y \in \{ \text{POS}, \text{NEG} \}} f(y) = -3.2$$

$$\text{arg max}_{y \in \{ \text{POS}, \text{NEG} \}} f(y) = \text{POS}$$