Notation $\underline{x} \in \mathbb{R}^n$ (underline for emphasis)

$X \in \mathbb{R}^{m \times n}$

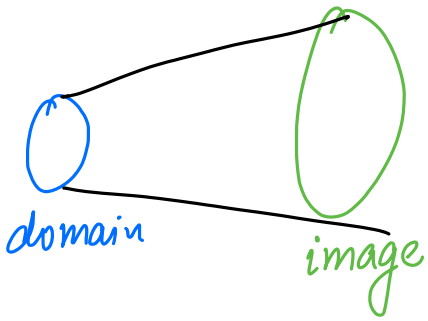
from context — $x \in \mathbb{R}$ a, b, c

$\mathcal{X} \subseteq \mathbb{R}^n$ set of vectors

function $f : A \to B$

Eg $f(x) = 1/x^2$

$f : \mathbb{R} \to \mathbb{R}$



$\text{domain } f = \mathbb{R} \setminus \{0\} := \{x \in \mathbb{R}, x \neq 0\}$

$\text{im } f = \mathbb{R}_{++} := \{x \in \mathbb{R}, x > 0\}$

Eg $f(X) = \log(\det(X))$

e.g. $f : \mathbb{R}^{m \times m} \to \mathbb{R}$

$\text{dom } f : \{X \in \mathbb{R}^{m \times m}, \det(X) > 0\}$

$\text{im } f : \mathbb{R}$