x takes values in $\mathbb{R}$. $\mathbf{x}$ takes values in $\mathbb{R}^3$.
$\mathsf{x} \,|\, \mathsf{y} = 3$ is the random variable x conditioned on $\mathsf{y} = 3$.

Notation Table

Symbol	Description
$\boldsymbol{x}$	Indicates that $\boldsymbol{x}$ is a vector, as opposed to a scalar x.
x	Indicates that x is a random variable, as opposed to a deterministic variable x. A random variable x will typically have probability density function p_{x}.
$\mathsf{x} \,\|\, \mathsf{y} = y$	Denotes a conditional random variable. For example, $\mathsf{x} \,\|\, \mathsf{y} = y$ is the random variable x conditional on y taking the deterministic value y.
$\mathbb{R}$	The set of real numbers.