

MA 8109 SUMMARY LEC 3

Int. theory $\rightarrow$ probab. theory $\rightarrow$ stoch. proc. $\rightarrow$ stoch. int. $\rightarrow$ SDEs $\rightarrow \dots$

$(\Omega, \mathcal{F}, P)$ probability space $[P(\Omega) = 1]$

X random variable if $X: \Omega \rightarrow \mathbb{R}$ is $\mathcal{F}$ -meas.

Distribution/law of X : $\mu_X(B) = P(X^{-1}(B))$, $B \in \mathcal{B}$

Cumulative distr. func'n $F_X(x) = \mu_X((-\infty, x])$

Probability density func'n f_X such that $\mu_X(B) = \int_B f_X(x) dx$
pdf does not always exist!