Math 525

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Spet 15

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Interesting fact:

Using the FTC, we have

$$\frac{d}{dx}F_X(x) = f_X(x)$$

if f_X is continuous at x.

The properties of F_X

(1) $0 \le F_X \le 1$.

(2) Limit properties:

$$\lim_{x \to -\infty} F_X(x) = 0, \ \lim_{x \to \infty} F_X(x) = 1.$$

(3) $F_X(s)$ is increasing (weakly) $\Leftrightarrow x_1 < x_2 \Rightarrow F_X(x_1) \le F_X(x_2)$.

Lemma 0.1. *Suppose* $A_1 \subset A_2 \subset \ldots \subset A_n \subset A_{n+1} \subset \ldots$

$$\mathbb{P}(\bigcup_i A_i) = \lim_i \mathbb{P}(A_i)$$