Thu Nov 17, 2011 8:33 AM

cdf is (1) increasing, and (2) left-continuous, so to use the definition in Eq.(2.7) in Xiu 2010 p.15.

saying that a cdf is monotonic is wrong; one must say that a cdf is increasing, since a cdf can have a flat plateau.

saying that a cdf is right-continuous, and then apply Eq.(2.7) in Xiu 2010 p.15 is wrong ! since that eq. is for left-continuous cdf.

Consider $F_X(\hat{x}) < \tilde{u} < F_X(\hat{x}^+)$

F_X (\hat x) < \tilde u < F_X (\hat x^+)

$$\hat{x} = \inf\{x | F_X(x) \geq \tilde{u}\}$$

\hat x = \inf \{ x | F_X(x) \ge \tilde u \}

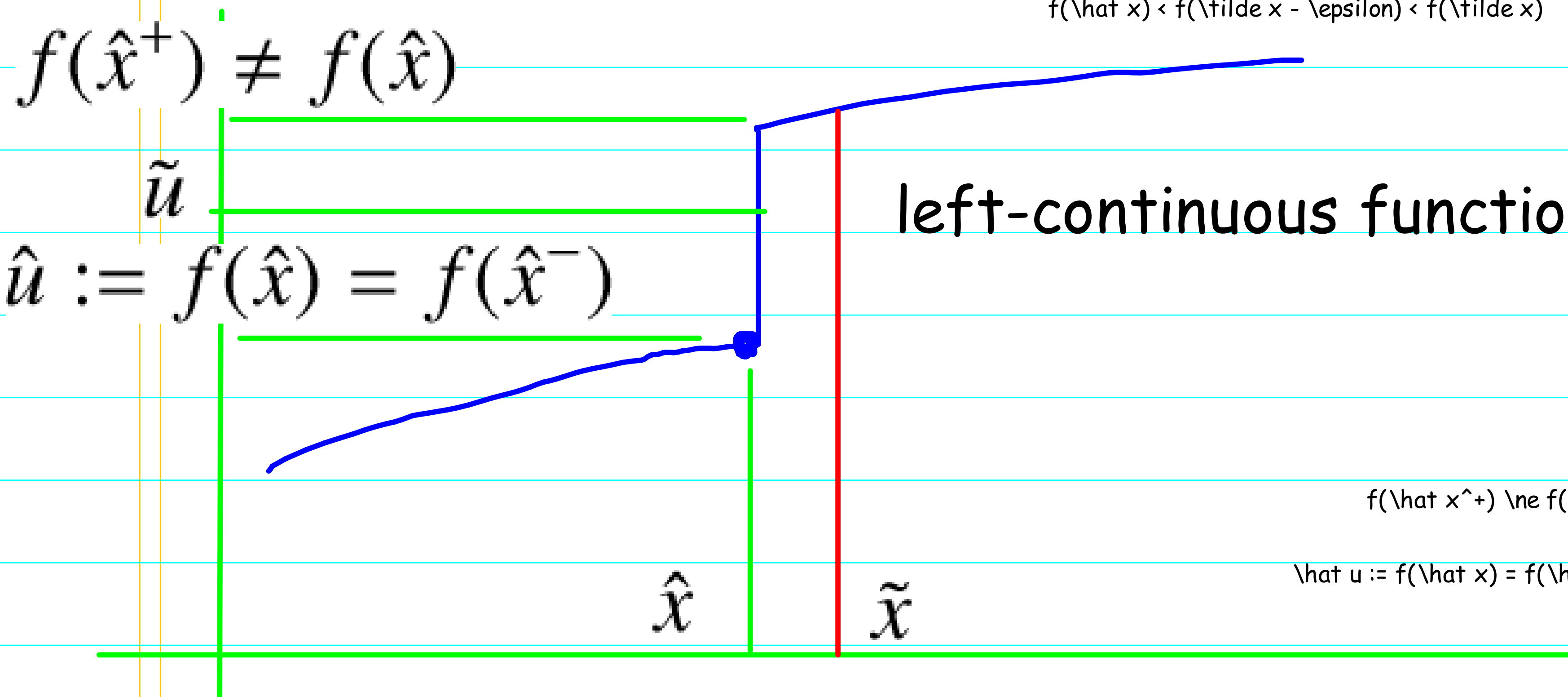
$$\hat{u} := F_X(\hat{x}) = F_X(\inf\{x | F_X(x) \geq \tilde{u}\}) < \tilde{u}$$

\hat u := F_X (\hat x) = F_X (\inf \{ x | F_X(x) \ge \tilde u \}) < \tilde u

$$f = F_X$$

f = F_X

f(\hat x) < f(\tilde x - \epsilon) < f(\tilde x)



left-continuous function

f(\hat x^+) \ne f(\hat x)

\hat u := f(\hat x) = f(\hat x^-)

So the proof should be corrected: Given U

$$F_X(\inf\{y|F_X(y) \geq U\}) \leq U < F_X(\tilde{x}), \text{ for } \tilde{x} > \hat{x}$$

F_X (\inf \{ y | F_X (y) \ge U \}) \le U < F_X (\tilde x), \text{ for } \tilde x > \hat x

$$\hat{x} := \inf\{y|F_X(y) \geq U\}$$

\hat x := \inf \{ y | F_X(y) \ge U \

$$\hat{x} < x \Rightarrow U < F_X(x)$$

\hat x < x \Rightarrow U < F_X (x)

$$P(X < x) = P(X \leq x)$$

Explain for dummies