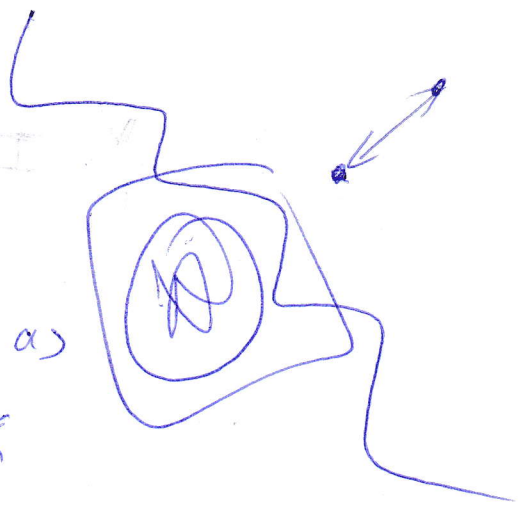
given decreasing set D, D^c is increasing.



def if $x \in D^c$, $x' \geq x$

if $x' \in D \Rightarrow x \in D$ as D decreasing.

so $x' \notin D \Rightarrow x' \in D^c$.

$\mathbb{P}(X \in D \mid X_i = x) = 1 - \mathbb{P}(X \in D^c \mid X_i = x)$ so is decreasing in x.

$p = 1 - F(x)$ $F \uparrow$ $\Rightarrow \downarrow$

$\mathbb{P}(P \in 1 - F(D) \mid P_i = p)$ → decreasing in x

→ increasing in p!

So