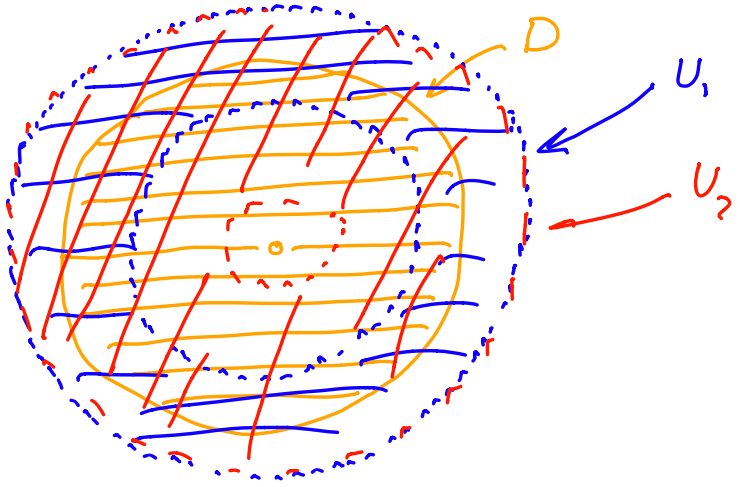
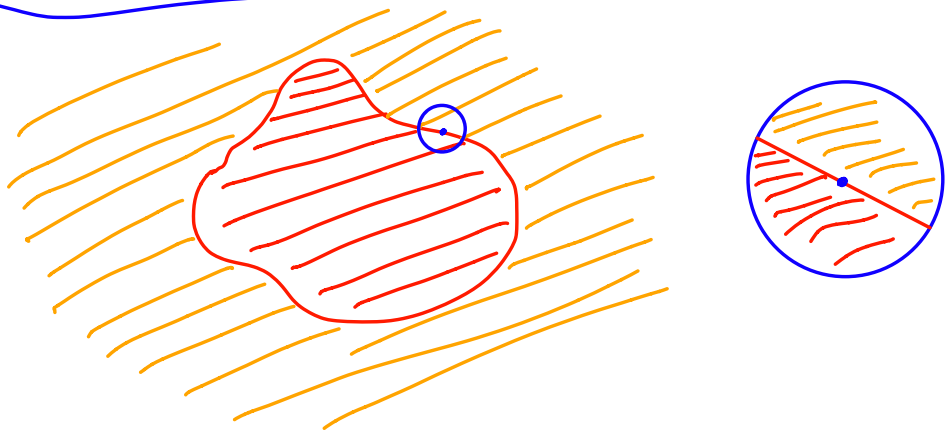
4.7.7



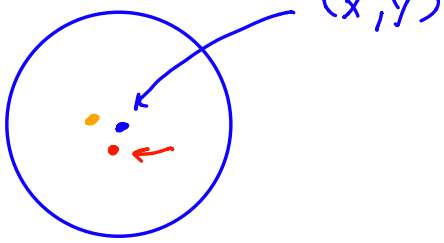
E $E^c = X \setminus E$ ∂E ?



4.7.6

$\mathbb{Q} \subset \mathbb{R}^2$ $\quad \partial\mathbb{Q} = \mathbb{R}^2$

↑ all points with rational coordinates



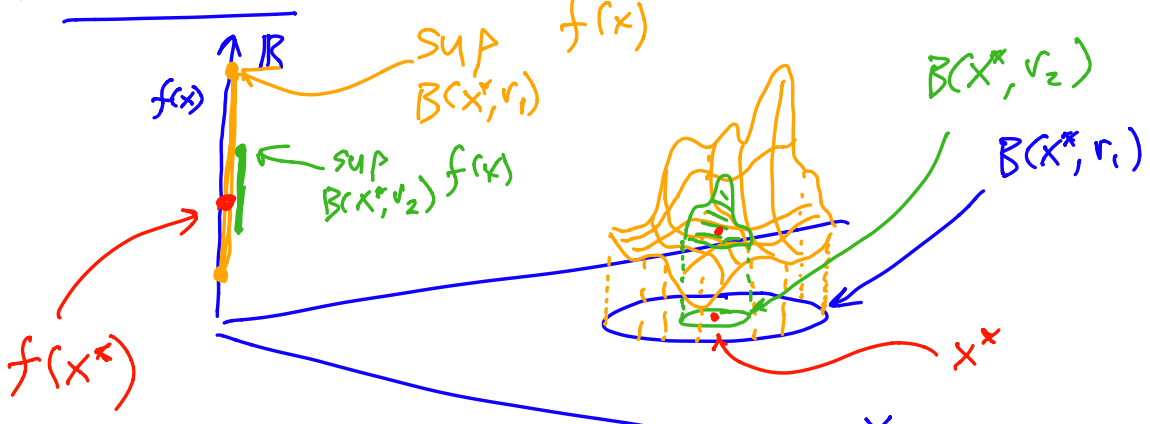
$\frac{1}{9}$ .111111111111...

10100100010000...

$\mathbb{R}^2 = \mathbb{Q}^\circ \cup \partial\mathbb{Q} \cup (\mathbb{Q}^c)^\circ$

↑ interior ↑ boundary ↑ exterior

Defn: 4.6.2



$$\limsup_{x \to x^*} f = \lim_{r \to 0} \left(\sup_{B(x^*, r)} f(x) \right)$$

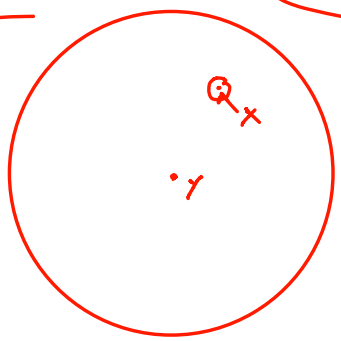
monotonic in r

$\Rightarrow \exists$ a lim !!

4.7.3

Hint:

$|y-x| < r$



$|y-x| = r-\delta$

$\delta > 0$