Example of alg closed field

① $\overline{\mathbb{Q}} \overset{\pi}{\subset} \mathbb{C} \overset{t}{\subset} \bigcup_n \mathbb{C}((t^{\frac{1}{n}})) = \overline{\mathbb{C}((t))}$ $\mathbb{C}[[t]]$

Puiseux series

$\overline{\mathbb{Q}}_p \subset \mathbb{C}_p$

$\mathbb{Q}_p \cdot \overline{\mathbb{Q}}$

② char $K = p$: $\overline{\mathbb{F}_q} = \overline{\mathbb{F}_p}$ $\left(Gal(\overline{\mathbb{F}_q}/\mathbb{F}_q) = \hat{\mathbb{Z}}\right)$

Task. ① Prove they are alg closed. $\left(\mathbb{C}, \bigcup_n \mathbb{C}((t^{\frac{1}{n}})), \mathbb{C}_p\right)$

② Find an element in each "C".

$C_p \setminus \bar{Q}_p$:https://math.stackexchange.com/questions/123925/is-the-algebraic-closure-of-a-p-adic-field-complete
https://math.stackexchange.com/questions/2430665/algebraic-closure-of-q-p-is-composite-of-bar-mathbbq-and-mathbbq-p
https://math.stackexchange.com/questions/2153580/transcendental-numbers-in-mathbbq-p