

## Math fact of the week

July 22, 2024

**Theorem** ([Wei73], [HM04]). *Let  $K$  be a number field which is not quadratic imaginary. If the generalized Riemann Hypothesis holds, then if  $\mathcal{O}_K$  is a principal ideal domain, then  $\mathcal{O}_K$  is a euclidean domain. If  $K$  is Galois over  $\mathbb{Q}$  with unit rank  $> 3$ , then this implication holds unconditionally.*

### REFERENCES

- [HM04] M. Harper and M. R. Murty. “Euclidean Rings of Algebraic Integers”. In: *Canadian Journal of Mathematics* 56.1 (2004).
- [Wei73] P. J. Weinberger. “On Euclidean rings of algebraic integers”. In: *Analytic number theory (Proc. Sympos. Pure Math., St. Louis Univ., St. Louis, Mo., 1972)*. Vol. XXIV. Proc. Sympos. Pure Math. Amer. Math. Soc., Providence, RI, 1973.