

Math 2001 - Assignment 12

Due April 15, 2026

- (1) [1, Ex 2.5.28c,d] Generalize the example from class to show that there exist complete theories T_n with exactly $n \geq 4$ countable models.
- (2) [2, Ex 5.2.2] Show that the theory of an equivalence relation with two infinite classes has quantifier elimination and is ω -stable. Is it \aleph_1 -categorical?
- (3) Use the Compactness Theorem to show that the infinite version of Ramsey's Theorem implies the finite version.
- (4) Show that every infinite partially ordered set $(A, <)$ contains an infinite chain (linearly ordered subset) or antichain (subset of incomparable elements).

Hint: Ramsey's Theorem.

REFERENCES

- [1] Marker. Model Theory: An Introduction. Springer, 2002.
- [2] Tent, Ziegler. A Course in Model Theory. Lecture Notes in Logic, Cambridge, 2012.