

MATH 272 – SECTION 004: HONORS CALCULUS I
FALL 2026
CHECKLIST FOR SOLVING RELATED RATES PROBLEMS
Prof. Arturo Magidin

0. **READ THE PROBLEM.** Related Rates problems usually have questions that ask “how fast,” “how much,” “at what rate,” and the like.
1. **SKETCH AND LABEL.** Making a sketch often helps. Label all quantities mentioned in the problem. Assign names to those that change over time.
2. **LIST QUANTITIES, RATES, AND UNITS.** List all quantities and rates of change (with units), and identify the ones you know, and the ones you need to determine. Make sure the units are consistent.
3. **FIND AN EQUATION.** Find an equation that relates the *quantities* involved in the problem. (Not their rates of change).
4. **USE IMPLICIT DIFFERENTIATION** (usually with respect to time) on the equation you found in Step 3, to get an equation that relates the quantities and their rates of change.
5. **PLUG IN.** Plug in all known values. *Note:* This may require you to use the equation from Step 3 to determine some of the values.
6. **SOLVE.** Solve for the rate of change you need to find.
7. **ANSWER THE QUESTION ASKED.** **Word problems require word answers.** Take the mathematical solution, and answer the question asked in a complete, coherent sentence that directly answers the question asked. Do not forget the units.