WORKSHEET: RELATED RATES

Names and student IDs: _____

    Interstate 25 and Interstate 40 meet at a right angle in central Albuquerque (NM). At noon one day, Professor Greenbottle was driving north on Interstate 25 at 70 mph, and was 3 miles south of the intersection. At the same time, a Mafia hit squad was driving west on Interstate 40 at 50 mph, and was 4 miles west of the intersection. Were Professor Greenbottle and the Mafia hit squad getting closer together or further apart? At what rate? (Be sure to include the correct units.)

    Steps:
- Understand the problem!
- Draw a picture if possible. (There is no picture in the solutions.) Name every quantity that varies with a **letter** (a function of time). (Here there are three of them in this problem.)
- State the information given, and what is to be found.
- Relate the variables. Choose a form of the relation that is easy to differentiate.
- Differentiate the relation, getting an equation involving quantities and their derivatives. **Be sure to use the chain rule!** In this problem, if there are less than three derivatives, you made a mistake.
- Put known values in the equation above, and solve for the quantity asked for.