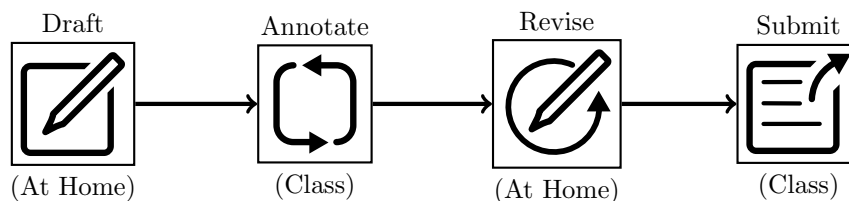


Math 130: PAR01

Initial Solution due Wed, Feb 5

Name: _____

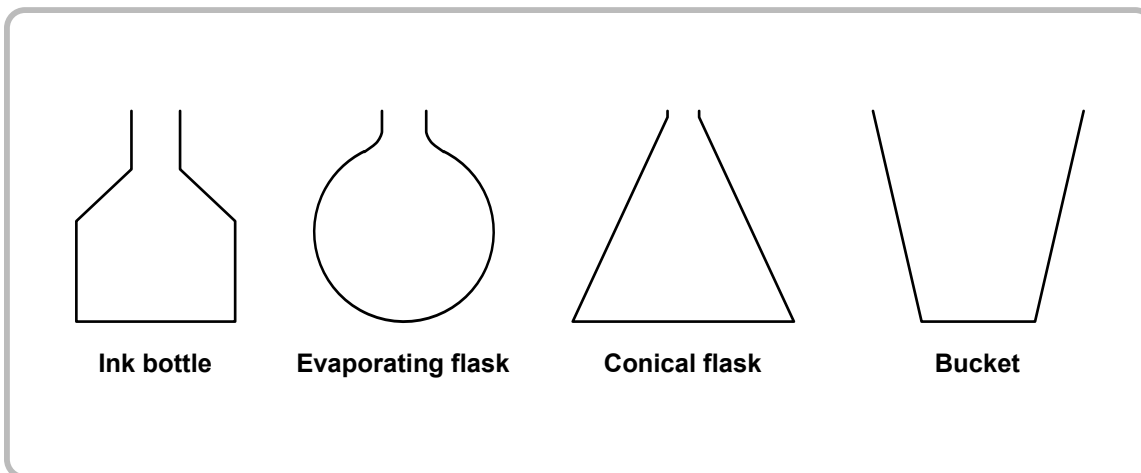
Final Solution due Fri, Feb 7




Bring your initial thoughts about the problem to class on the initial due date to discuss it with your peers. Based on the discussion and feedback, you may revise your solution before turning in your final solution. Your final solution should follow the guidelines outlined in the syllabus.

(Developed from D. Reinholz’s work on PAR. https://newscenter.sdsu.edu/education/crmse/daniel_reinholz.aspx)

Problem Statement (Filling Bottles)



For a science experiment, you are filling up various bottles with liquid, pictured above. The liquid comes from a tap that pours water at a constant rate.

1. For each bottle, sketch a graph of the height of liquid in the bottle as a function of time. 
2. For each bottle, sketch a graph of the rate of change of the height of liquid in the bottle as a function of time.
3. For each graph in part (2), imagine that it described the height of liquid in a bottle as a function of time. If it is possible for a bottle being filled from a tap pouring at a constant rate to generate such a graph, sketch the bottle. For the other graphs, explain why no bottle could generate them.