CE202A, Spring Semester 2005, ENV Comp Exam.

1. Draw schematically the water retention curve and the conductivity curve for a soil of your choice. Add tic marks with numbers to the axes of your plots. Do not worry about calculations; we just want to see here orders of magnitude and correct conceptualization.
2. Plot a rough but reasonable approximation of the vertical profile of pressure head assuming steady state infiltration at a rate of $0.3K_s$, where K_s is the saturated conductivity of your soil. What is the pressure head at the unit gradient flow region? Assume that the water table is at depth 2.0 meters.
3. Repeat (2) but for an infiltration rate of $0.6K_s$.
4. Now assume that plant roots exist over the top 1 meter of the soil profile, and that the total root uptake is $0.3\ K_s$. Draw schematically the pressure head distribution assuming that the infiltration rate is $0.6K_s$.
5. Repeat (4) for rooting depth of 0.3m
6. Show if and how the plots in (4) and (5) can be related to those drawn in (2) and (3).