

MAE123, Assignment 2

Problem 1 (25 points)

An undisturbed cylindrical core sample of soil 10 cm high and 5 cm in diameter weighs 350gm. The density of solids is $\rho_s = 2.65g/cm^3$. Calculate the total porosity.

Problem 2 (25 points)

Derive the solution for K in Eq. (2.52) of the Notes.

Problem 3 (25 points)

Find the constants of integration a_1 and a_2 in (2.58) and derive (2.60).

Problem 4 (25 points)

Derive the expression for Darcy's flux (2.63) from (2.60).