HW#4

Assignment: September 22, 2009
Due: Tuesday, September 29, 2009

Solve the total velocity equation for the pressure gradient ∇P. Substitute into the water saturation equation and simplify.

Total velocity equation:

$$\vec{v}_T = -\vec{k}(\lambda_T \nabla P_o - (\gamma_w \lambda_w + \gamma_o \lambda_o)\nabla D - \lambda_w \nabla P_{cwo})$$

Water saturation equation:

$$\nabla \cdot \vec{v}_w + \hat{q}_w = \phi S_w (C_w + C_\phi) \frac{\partial P}{\partial t} + \phi \frac{\partial S_w}{\partial t}$$