Project 1, Loudspeaker Modeling

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1 Shallow water with non-horizontal bottom

The shalow water model of HW2 is now extended to a non-horizontal bottom "bathymetry" $B(x)$.

$$\begin{pmatrix} h \\ m \end{pmatrix}_t + \begin{pmatrix} m \\ f_2(h,m) \end{pmatrix}_x = \begin{pmatrix} 0 \\ 0 \end{pmatrix}$$

a) Show that still water (u=0) must have, as it should, a horizontal water level.

b) Write the equation in conservation form for h and $m = hu$.