Ex 8. *Ekman layer under oscillatory flow.*

Consider the Ekman boundary layer near the seabed \( z = 0 \) forced by tidal oscillations in the sea. Let the horizontal velocity of the tide just above be

\[
\Re(U_0 e^{i\omega t}), \Im(V_0 e^{i\omega t})
\]  

where \((U_0, V_0)\) are real constants. Find the vertical structure of the Ekman layer in the presence of earth rotation. Discuss the mass flux across the entire layer and the bottom shear stress.