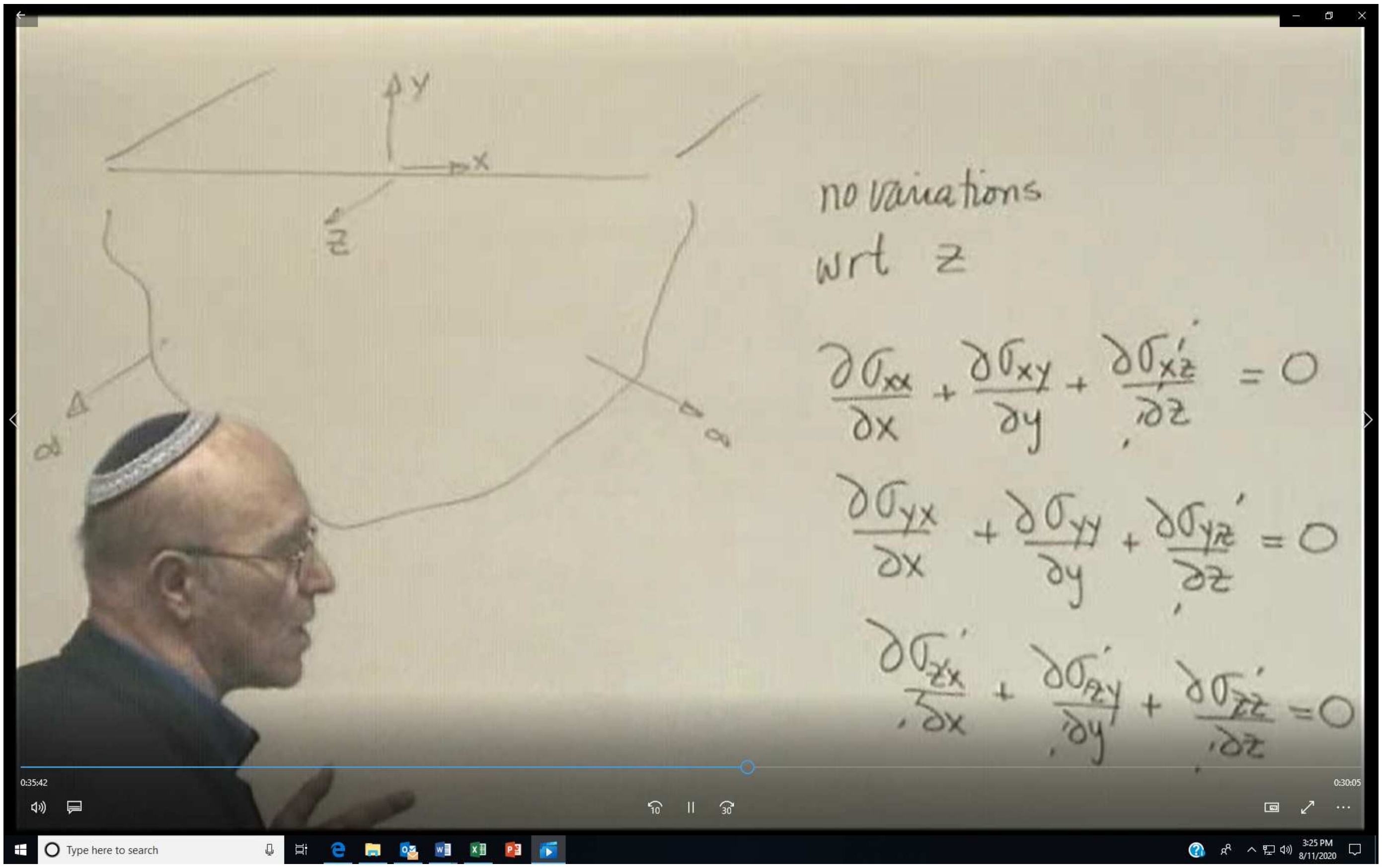
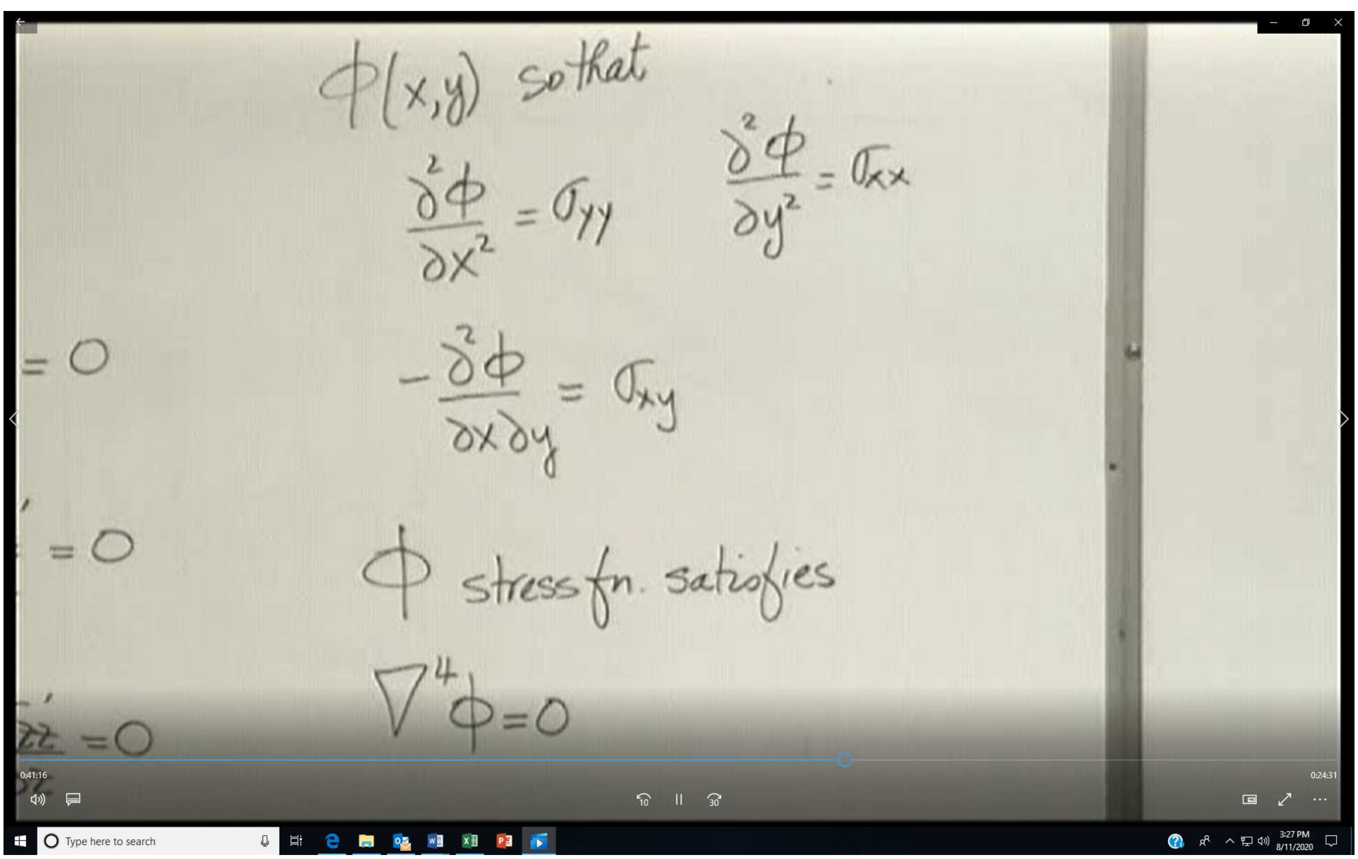
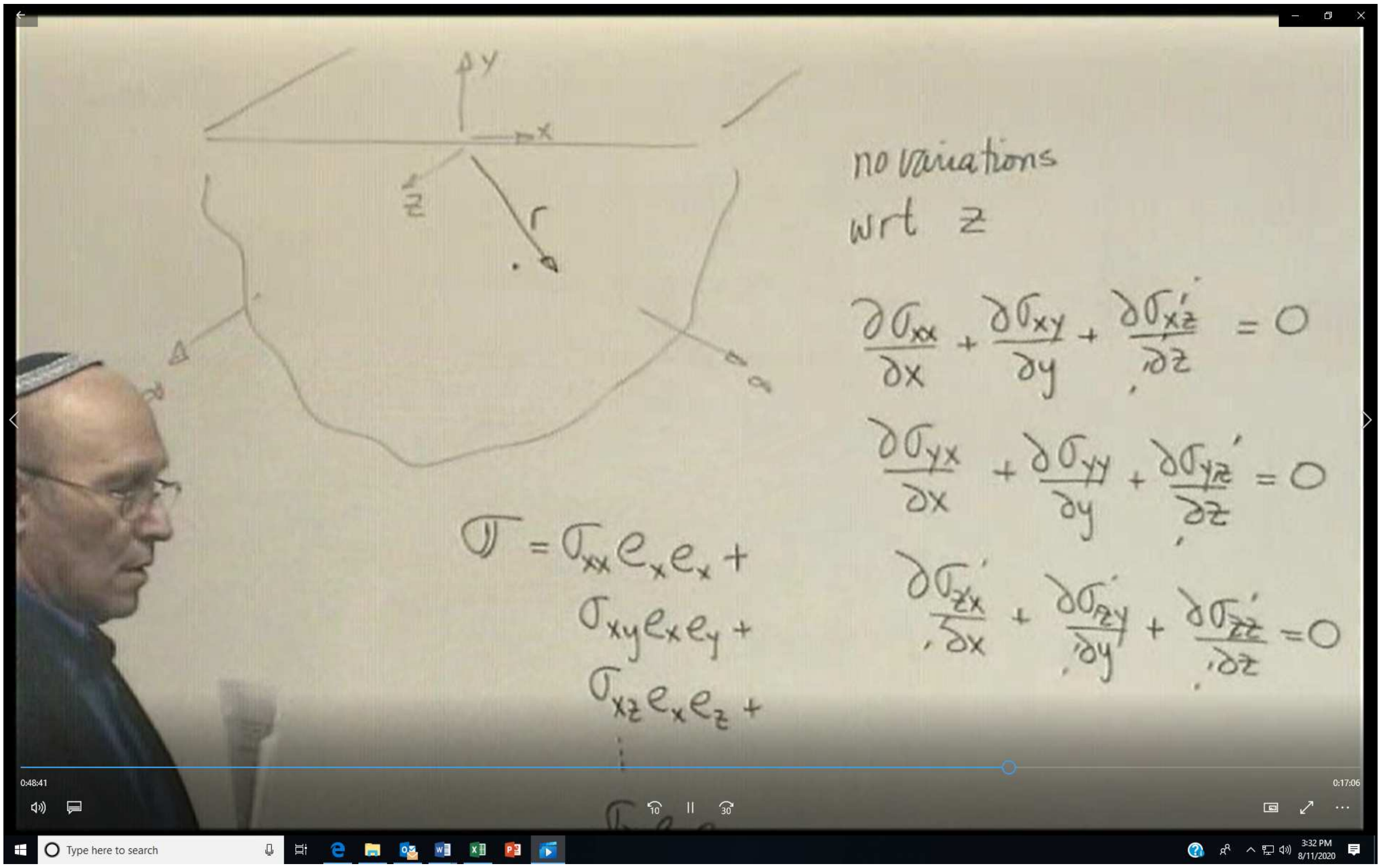
Preliminaries to using Fourier transform. Understanding definitions of stresses



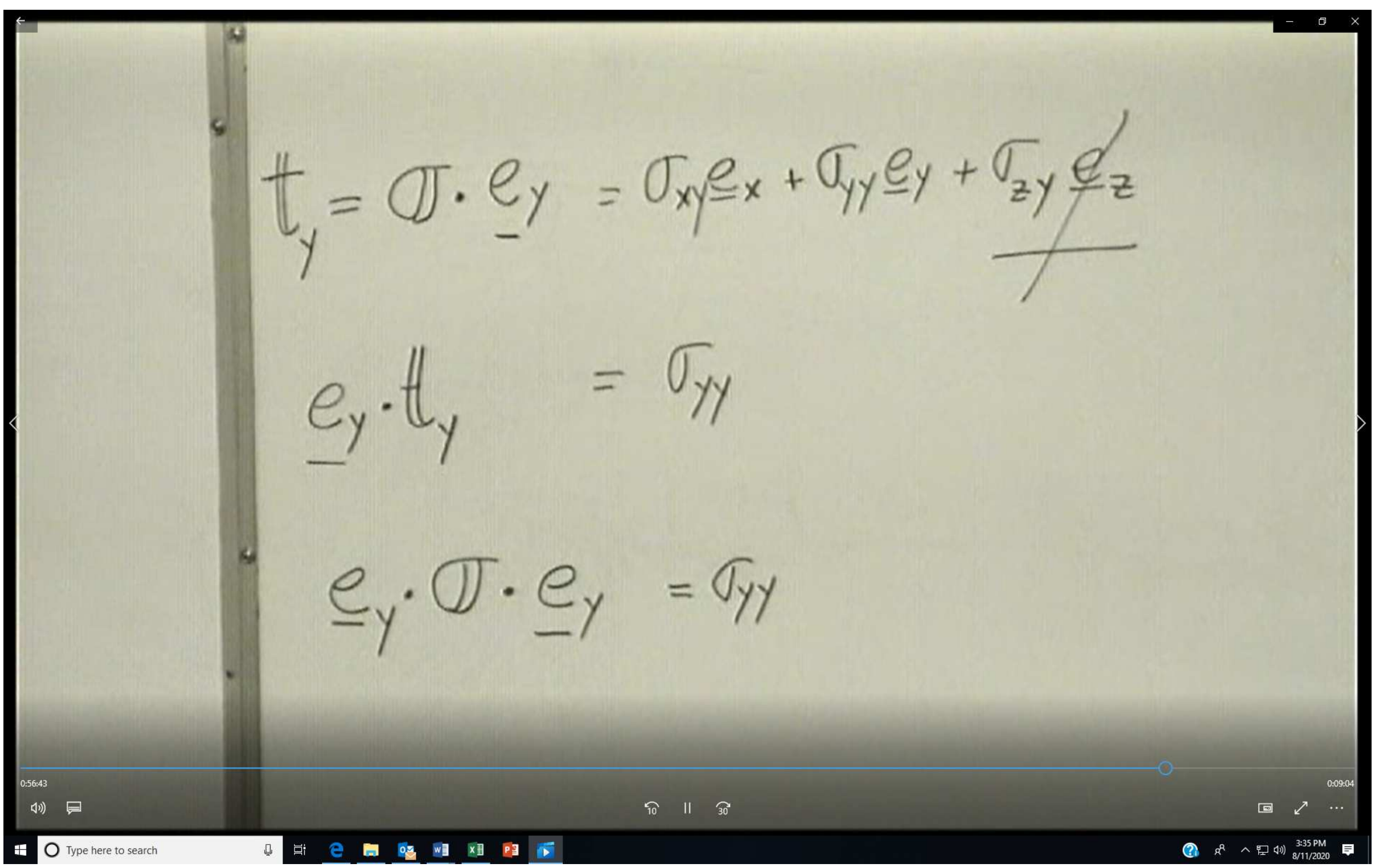

The equation that the stresses satisfy if we define a stress function is the biharmonic equation $\nabla^4\phi = 0$



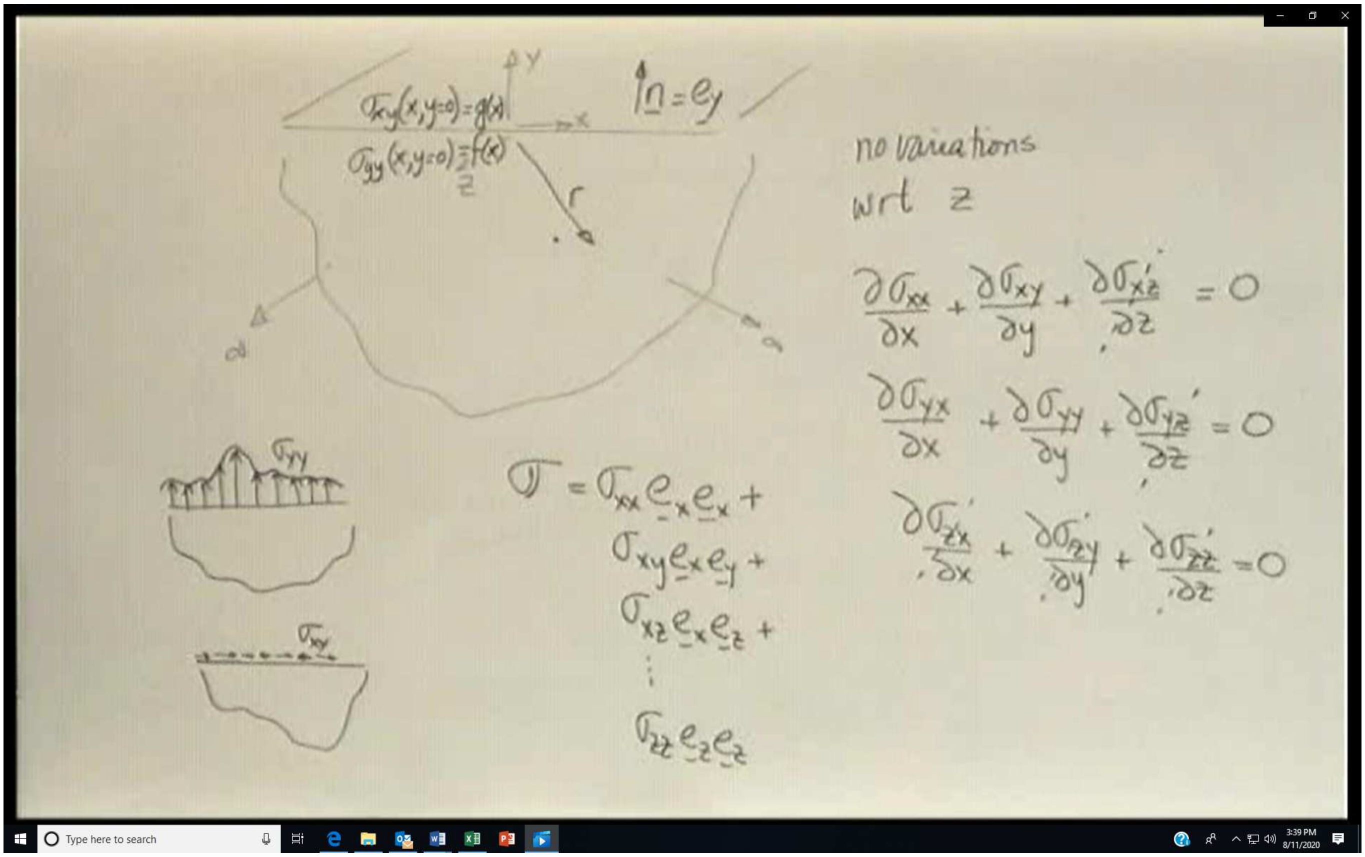
Stress tensor has two unit vectors: one for direction of force component/one perpendicular to surface




If we speak of a traction vector on a surface, $\mathbf{t}_y$, take dot product of stress tensor with normal to that surface.



On a surface there are 3 stresses. For problems in plane stress, where no variations with z, $\sigma_{yz} = 0$. To find a particular stress, e.g., $\sigma_{yz}$ , take the dot product of the stress tensor with the unit vectors $e_y$ and $e_z$




Einsteinian notation says that if two elements have the same subscript, it represents a summation