1 Read Weinberg's book, chapter 1

2 On the video, go to ~40 min. (start of page 3 of the notes), and show the missing passage:

$$\hat{H}\psi = (\vec{\alpha}\cdot\hat{\vec{p}} + \beta m)\psi \rightarrow (i\gamma^\mu \partial_\mu - m)\psi = 0$$

3 On the video, go to ~56 min. and consider the integral:

$$U(t) = \frac{1}{2\pi^2 |\vec{x} - \vec{x}_0|} \int_0^\infty \rho \, d\rho \, \sin(\rho |\vec{x} - \vec{x}_0|) \, e^{-it\sqrt{\vec{p}^2 + m^2}}$$

Get an approximate solution to it (without resorting to integral tables or software like Mathematica) and show it is not zero for x >> t (outside the light cone).

(Tip: the point is to learn the Saddle Point approx., or in this case with the complex exponential, its "complex version", the Stationary Phase Method).