

1. Using Jackson equation 7.113 for real angular frequency ω , derive equations 7.120 from equations 7.119.

2. Find the Fourier transform $\tilde{f}(\omega)$ of $f(t) = \frac{1}{1 + (3t)^2}$ using the conventions from the notes.

BONUS (due when the homework is due):

Draw an accurate picture of Pink Floyd's "The Dark Side of the Moon" album cover, front and back. Use a converging lens like Isaac Newton did on the dispersed spectrum so white light into one prism to form a spectrum can be recombined by a second prism back into white light. Explain the errors on the album cover and on xkcd's attempt at a correction (still wrong).

<http://www.physics.smu.edu/scalise/P7312sp23/notes/darkside.jpg>

<https://xkcd.com/964/>