ECE 4512 Homework 2 Leo Berman

Chapter 2

1.) $\int_0^1 e^{-j2\pi ft}\,dt = \frac{e^{-j2\pi ft}}{-j2\pi f}\Big]_0^1 = \frac{-e^{-j2\pi f}}{j2\pi f} + \frac{1}{j2\pi f} = \frac{1-e^{-j2\pi f}}{j2\pi f}$

2.) $F(tri(t)) = sinc^2(f)$

$F(rect(\frac{t}{2})) = 2sinc(2f)$

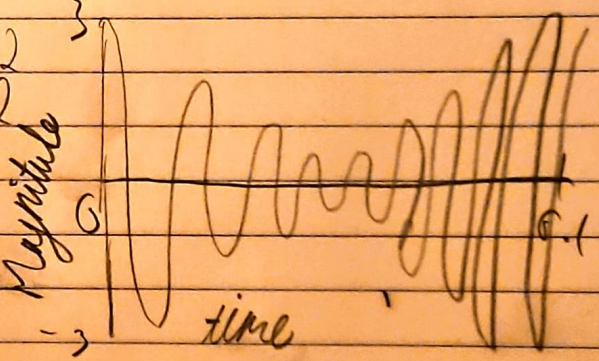
$F(tri(t)+rect(\frac{t}{2})) = sinc^2(f) + 2sinc(2f)$

3.) $\frac{1}{2j}[\delta(f-10) - \delta(f+10)]$

Chapter 3

1a) $t=0 \quad y=3 \qquad t=.025 \quad y=-2$
$t=.1 \quad y=3 \qquad t=.075 \quad y=-2$
$t=.05 \quad y=1$

Maximum Value = 3



1b) $S(f) = [\delta(f-100)+\delta(f+100)] + \frac{1}{4}[\delta(f-110)+\delta(f-90)+\delta(f+90)+\delta(f+110)]$