

Signals and Systems ECE 202

Assignment 1

1. If $g(t) = 7e^{-2t-3}$, write out and evaluate or simplify each function.
 - (a) $g(3)$
 - (b) $g(2 - t)$
2. Given that $f(t) = \text{rect}(t + 2) + \text{rect}(t - 2)$, plot the following functions:
 - (a) $f(t)$
 - (b) $g(t) = f(t - 1)$
 - (c) $h(t) = f(t)u(t)$
 - (d) $p(t) = h(t - 1)$
3. Plot the following:
 - (a) $f(t) = \text{rect}(\frac{t}{4}) - \text{rect}(\frac{t}{2})$
 - (b) $g(t) = 2\text{tri}(\frac{t}{2}) - \text{tri}(t)$
 - (c) $h(t) = 2\text{tri}(\frac{t}{2}) - 2\text{tri}(t)$
 - (d) $p(t) = [\text{rect}(\frac{t}{4}) - \text{tri}(\frac{t}{2})] \text{sign}(t)$
4. Given the positive real constants b and t_0 , and the function $f(t) = \text{tri}(t)u(t)$, sketch the following
 - (a) $f(t)$
 - (b) $f(\frac{t}{b})$
 - (c) $f(t + t_0)$
 - (d) $f(-t)$
 - (e) $f(\frac{t-t_0}{b})$
 - (f) $f(\frac{t_0-t}{b})$
5. Find the even and odd parts of these functions
 - (a) $g(t) = 2t^2 - 3t + 6$
 - (b) $g(t) = \frac{2t^2-3t+6}{1+t}$
 - (c) $g(t) = t(2 - t)(1 + 4t)$
6. Describe a signal (other than those given in class or the textbook). Use the internet to find some background information or examples of your signal. Prepare powerpoint slides to document your findings.