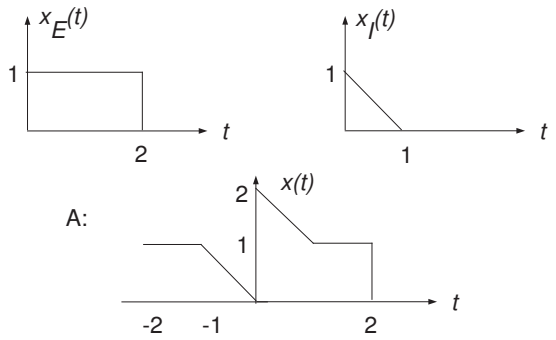
520:214: Recitation Problem Set 1

Go over a few of the "hard" problems on the self-test.

1. Write $e^{j\pi/2} + j\sqrt{2}e^{j\pi/4}$ in rectangular form and in polar form.

   A: $\left(-1+2j,\ \sqrt{5}e^{j\tan^{-1}(2/-1)} \sim \sqrt{5}e^{j7\pi/10}\right)$ (The approximation to the angle is not required!)

2. Suppose the even part and odd part of a signal are specified for $t \geq 0$ as shown. Sketch the signal.

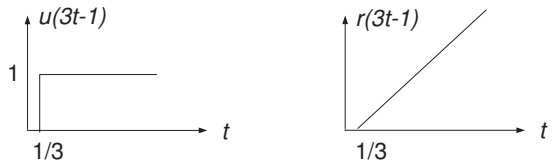


3. Is $x(t) = te^{-t}u(t)$ an energy signal, power signal, or neither? Repeat for $x(t) = te^{-t}$.

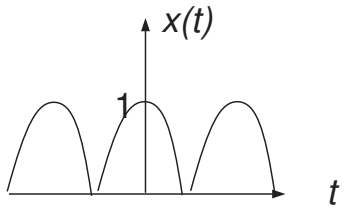
   A: (energy, neither, Don't need to do the integration).

4. Sketch $(3t-1)$ and $r(3t-1)$.

   A: Slope of $r(3t-1)$ is 3.



5. Is $x(t) = |\cos(2\pi t)|$ periodic? If so, what is the fundamental period?
   A:



$T_0 = 1/2$