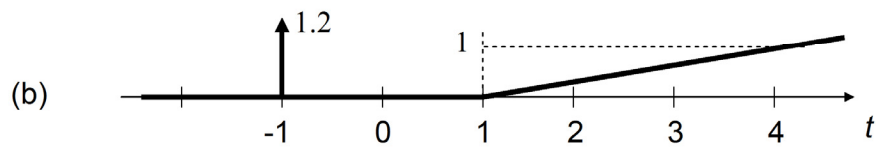
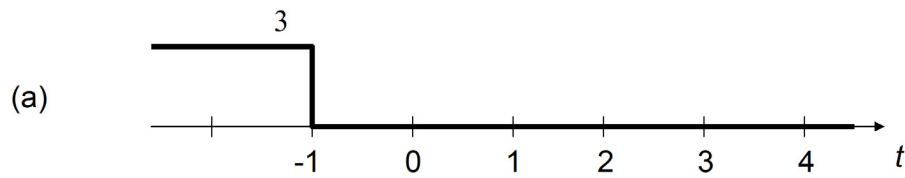


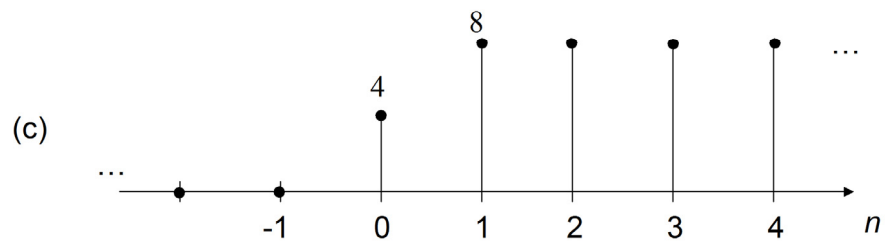
Name: _____

EE322 Fall 2009 Exam I Worksheet

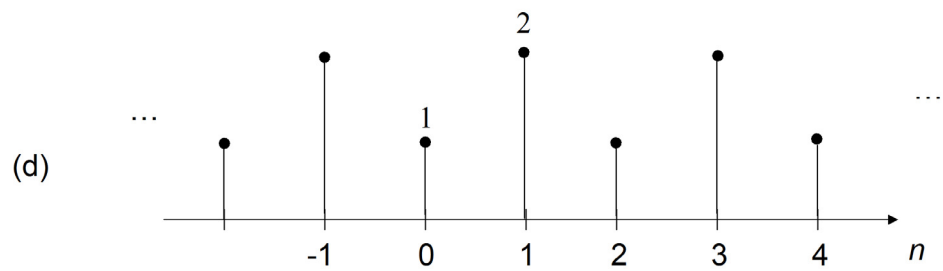
1. Write the equation for the following functions in terms of the basic continuous time functions:



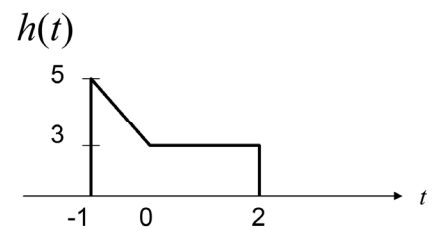
Use ramp functions only to answer part (c).



Use periodic impulse functions only to answer part (d).



2. Given $h(t)$ shown to the right, plot $2h\left(-\frac{t}{3}+4\right)$.



3. Compute the energy and the power of the following signals, and then determine if they are energy or power signals.

a. $x[n] = 5 \cdot \text{rect}_3[n]$

b. $w(t) = -2 \cdot \sin\left(2\pi 211.5t + \frac{\pi}{17}\right)$

4. Given a discrete signal described by $x[n] = 2\delta[n+3] - \delta[n+1] + 5\delta[n] + 2\delta[n-4] + 2\delta[n-5]$.

a. Sketch $x[2n-2]$.

b. Sketch $x[n/2]$.

5. Find the energy and power in the signal $z[n] = 3 \cdot u[n+3] - 3 \cdot u[n-2]$. Is this an energy signal or a power signal?

6. Find the fundamental period of $y[n] = 18 \cdot \sin(0.25\pi n) - 50 \cdot \sin\left(\frac{5\pi n}{6}\right)$.

7. Find and sketch the even and odd parts of $z(t) = 5 \cdot u(t-1)$

8. Create a plot vs. time of the two electrical currents in a circuit for times $t=0$ to $t=500$ ms, in 1 ms increments, where the first current is computed as: $i_1(t) = 2e^{-t/0.2} \sin(2\pi 10t)$ Amps and the second as: $i_2(t) = 2.5e^{-t/0.2} \sin(2\pi 10t - 2\pi / 3)$ Amps. Provide a grid, label the plot, and include a legend. What is the maximum value of the current (i.e., the max of both currents)? Turn in your code and your plot.

Max current = _____