1. For each signal, determine if it is periodic, and if it is, find the fundamental period:
(a) $x(t)=2 \cos (2 t)-3 \sin (3 t)$
(b) $\mathrm{x}(\mathrm{t})=\mathrm{e}^{(\mathrm{j} 2.4 \mathrm{t})}$
(c) $x(t)=u(t)$
(d) $x(t)=2 \cos (2.1 \pi)$
(e) $x(t)=e^{(j 2.4 t)}+2 e^{(j 3.6 t)}$
(f) $x(t)=\cos \left(5 t^{2}\right)$
(g) $x(t)=(-t)^{3}$
(h) $x(t)=t u(t)+\sin (\pi t / 2)$
(i) $\mathrm{x}(\mathrm{t})=\mathrm{e}^{(\mathrm{j} 2 \pi \mathrm{t})}+1$
2. Categorize each of the following signals as a finite energy signal or a finite power signal:
(a) $\mathrm{x}(\mathrm{t})=10^{6}\left[\mathrm{u}(\mathrm{t}-1)-\mathrm{u}\left(\mathrm{t}-10^{9}\right)\right]$
(b) $\mathrm{x}(\mathrm{t})=\mathrm{u}(\mathrm{t}) \cos (\mathrm{t})$
(c) $x(t)=e^{(j \pi t)}$
(d) $\mathrm{x}(\mathrm{t})=\mathrm{u}(\mathrm{t}+1) \cos (\mathrm{t})$
(e) $x(t)$ shown in the figures shown


3. For the triangular pulse signal $x(t)$ shown below, sketch each of the following signals derived from $x(t)$ :
(a) $y_{1}(t)=x(3 t)$
(b) $y_{2}(t)=x(-2 t-1)$
(c) $\mathrm{y} 3(\mathrm{t})=5 \mathrm{x}(\mathrm{t})-3 \mathrm{x}(\mathrm{t}-1)$

4. Decompose the following signals into even and odd parts:
(a) $x(t)=\cos (2 t)+\sin ^{2}(3 t)$
(b) $x(t)=u(t)$
(c) $\mathrm{x}(\mathrm{t})=\mathrm{t} \sin (\mathrm{t})$

- Deadline: Thursday June 11, 2015

