Q1 Let x(t) be the signal as shown below:
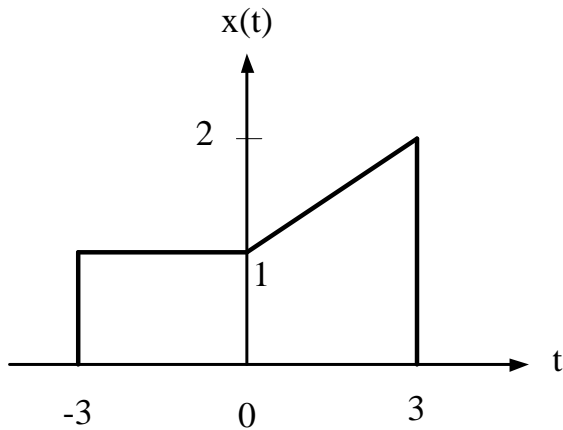
(a) Plot x(−t/3)

(b) Plot x(3t−6)

(c) Plot x(3+t)

(d) Plot x(2−t)

(e) Plot 4x(t) −2

(f) Plot 2x(t) +2

(g) Plot 2x(2t) +2

(h) Plot −4x(t) +2

(i) Plot the even and odd part

(j) Express x(t) in terms of singularity functions (*impuls,step,ramp*)

Q2   For each signal below , determine if the signal is periodical or not periodical . If periodical , find its fundamental period

(a) $x(t) = \cos(3t) + \sin(5t)$

(b) $x(t) = \cos(t) + \sin(\pi t)$

(c) $x(t) = \cos(4\pi t) + \sin(6\pi t) + e^{j5\pi t}$

Q3 Evaluate the following integrals:

(a) $\displaystyle\int_{-\infty}^{\infty} \cos(2t)\delta(t)dt$

(b) $\displaystyle\int_{-\infty}^{\infty} \cos[(2(t-(\pi/4)]\delta(t-(\pi/4))dt$

Q4 Let the system that describe the input x(t) and output y(t) be described as

$$y(t) = \int_{1}^{2} x(\tau - 2)d\tau$$

Determine weather the system is (explain)

(a) Memoryless
(b) Invertible
(c) Stable (BIBO)
(d) Time invariant
(e) Linear