1.   Find the Laplace transforms of the following waveforms:

a) $(t-a)\cos(t-b)u(t-a)$ where $a>0$

b) $\dfrac{d}{dt}\left[t\sin(\omega t)+t^2\right]$

c) $f(t)=t\cos(\omega t)e^{-at}$

d) $t\displaystyle\int_0^t te^{-at}\,dt$

2.   Find the Laplace transform of the following waveform:

$t\sin(\omega t)\cos(\omega t)$

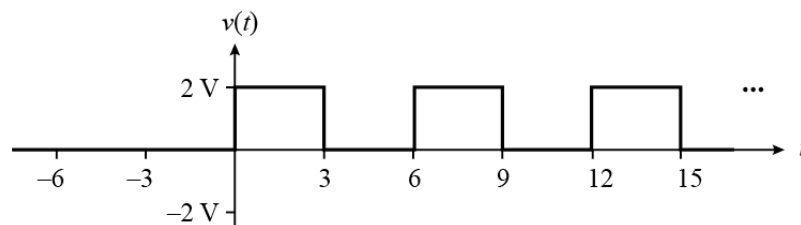3.   Find the inverse Laplace transform for each of the following expressions:

a) $F(s)=\dfrac{5s+18}{s^2+6s}$

b) $F(s)=\dfrac{7s+70}{s^2+8s+25}$

c) $F(s)=\dfrac{-3s^2+99s-1200}{s^3+11s^2+100s+1100}$

d) $F(s)=\dfrac{15s^2+186s+624}{s^3+18s^2+112s+160}$

4.   Find the Laplace transform, if possible, of the following square wave:

5.   Find the inverse Laplace transform of $\dfrac{24s}{(s+5)^4}$. Note: $\mathcal{L}\{t^n e^{-at}\}=\dfrac{n!}{(s+a)^{n+1}}$