Digital Assignment – I
Signals and Systems: EEE1005

NAME: MADHUKUMAR.S
REG NO: 17BEE0117

Write a MATLAB function to implement a continuous time signal "pulse(t)" defined as follows:

$$pulse(t) = \begin{cases} 1; & for\ 0 \le t \le 1 \\ 2-t; & for\ 1 \le t \le 2 \\ 0; & otherwise \end{cases}$$

The MATLAB function pulse(t) should accept a 1 by N row vector t as input and output a 1 by N row vector of corresponding values of the signal at the time instants specified in the t vector. Plot the following signals pulse(t), pulse(1-t) and pulse(2t+3) using the **plot** command. Check the correctness of your output by manually plotting the above signals.

MATLAB CODE

Editor window:

Editor - C:\Users\Win\pulse.m

eigenvaluevector.m | suspension.m | potential.m

```
1   function x=pulse(t)
2 -   x=zeros(size(t));
3 -   l1=(t>=0 & t<=1);
4 -   l2=(t>=1 & t<=2);
5 -   x(l1)=1;
6 -   x(l2)=2-t(l2);
7 -   return;
8 -   end
9
```

Command window:

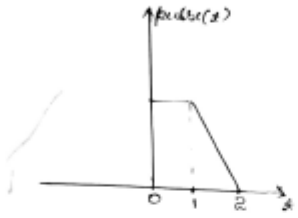
Command Window

```
>> t=-5:0.1:5;
>> x=pulse(t);
>> subplot(3,1,1);
>> plot(t,x);
>> xlabel("t");
>> ylabel("x=pulse(t)");
>> title('t v/s pulse(t)');
>> y=pulse(1-t);
>> subplot(3,1,2);
>> plot(t,y);
>> xlabel("t");
>> ylabel("y=pulse(1-t)");
>> title('t v/s pulse(1-t)');
>> z=pulse(2*t+3);
>> subplot(3,1,3);
>> plot(t,z);
>> xlabel("t");
>> ylabel("z=pulse(2t+3)");
>> title('t v/s pulse(2t+3)');
fx >>
```

Check the correctness of your output by manually plotting the above signals.

$$\text{pulse}(t) = \begin{cases} 1 & ; \text{for } 0 \le t \le 1 \\ 2-t & ; \text{for } 1 \le t \le 2 \\ 0 & ; \text{for otherwise} \end{cases}$$

pulse (t)



plotting

pulse (1 − t)

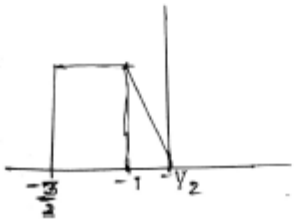
$t \to -t$: pulse (−t) (Reverse/Inversion)

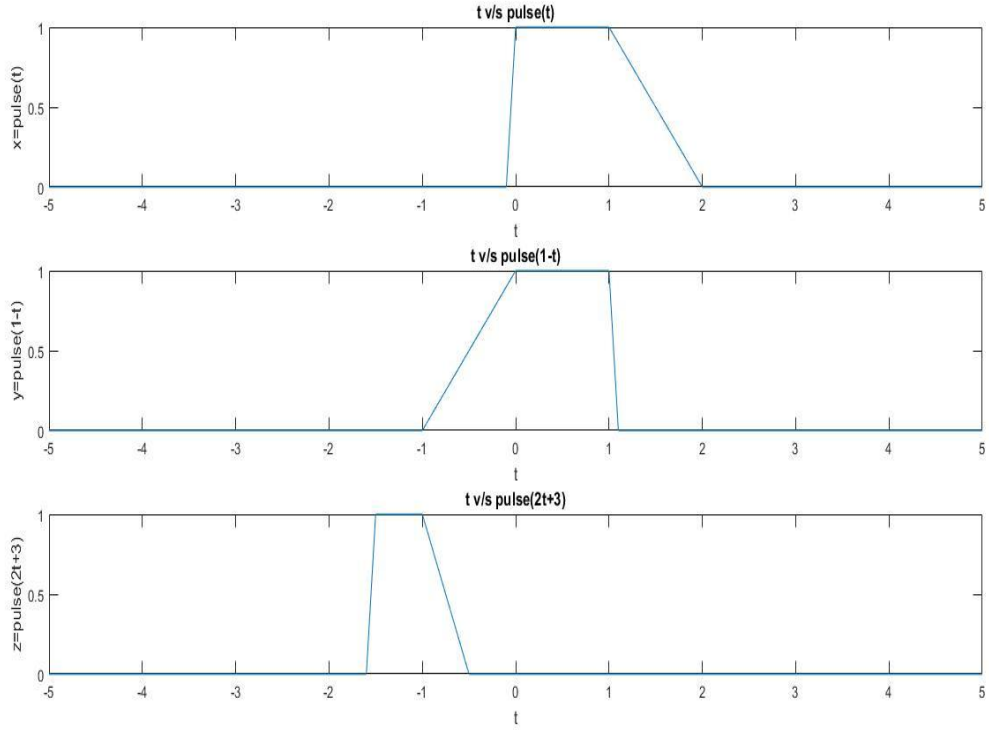
$t \to t-1$: pulse (1 − t)

pulse (2t + 3)

pulse (t) $\xrightarrow{t \to 2t}$ pulse (2t) compressing

$t \to t + \frac{3}{2}$: pulse (2t + 3) left Shift




t v/s pulse(t)
x=pulse(t)
t
t v/s pulse(1-t)
y=pulse(1-t)
t
t v/s pulse(2t+3)
z=pulse(2t+3)
t