Ejercicio 8 –GUIA 2

$$x(t) = u(t) + 2\cdot u(t-2) + u(t-5)$$

$$h(t) = e^{t}\cdot u(1-t)$$

$$y(t) = \int_{-\infty}^{\infty} x(\tau)\cdot h(t-\tau)\, d\tau$$

$$y(t) = \int_{0}^{2} e^{t-\tau}\, d\tau - 2\cdot\int_{2}^{5} e^{t-\tau}\, d\tau \qquad \text{Si } t<=1$$

$$y(t) = \int_{t-1}^{2} e^{t-\tau}\, d\tau - 2\cdot\int_{2}^{5} e^{t-\tau}\, d\tau \qquad \text{Si } 1<=t<=3$$

$$y(t) = -2\cdot\int_{t-1}^{5} e^{t-\tau}\, d\tau \qquad \text{Si } 3<=t<=6$$

$$y(t) = 0 \qquad \text{Si } t>=0$$

Sintaxis en Matlab:

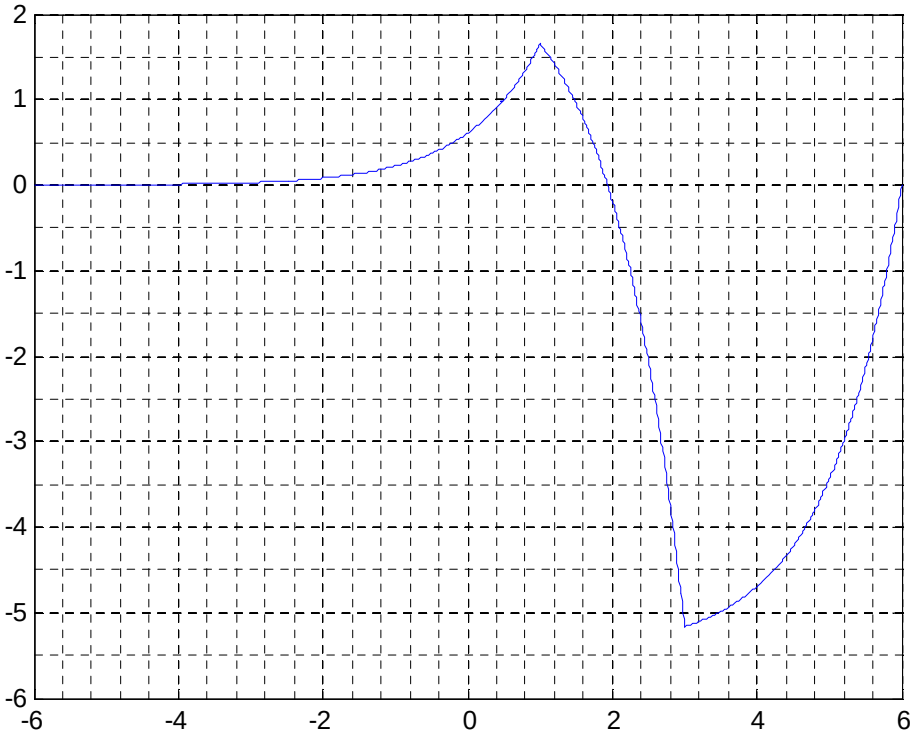
```
close all;

%RESOLUCION ANALITICA
t=-6:0.01:1;
figure, plot(t,-3*exp(t-2)+2*exp(t-5)+exp(t)); %Para t<1
t=1:0.01:3;
hold on, plot(t,-3*exp(t-2)+2*exp(t-5)+exp(1)); %Para 1<t<3
t=3:0.01:6;
hold on, plot(t,2*exp(t-5)-2*exp(1)); %Para 3<t<6
grid minor;


%RESOLUCION POR FUNCION CONV
t=-10:0.01:10;
x=heaviside(t)-2*heaviside(t-2)+heaviside(t-5);
h=exp(t).*heaviside(1-t);
figure, plot(conv(x,h));
grid minor;
```

Graficas:

Solución Analitica:



Solución de Función CONV: