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Signals and Systems
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Extra Credit Problem 5.45(c)

5.45(c) – Compute the output response $y[n]$ to an input of $x[n]=1+\sin((\pi/4)*n)+\sin((\pi/2)*n)$.

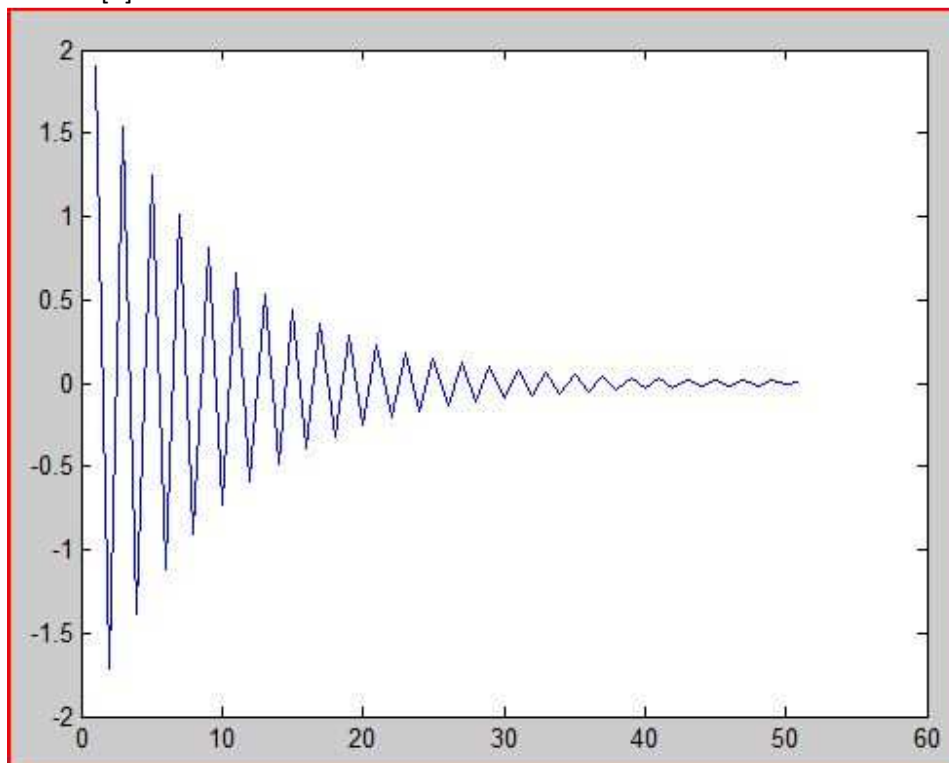
Impulse Response : $h[n]=1.9*(-0.9)^n*u[n]$

$Y[n]=x[n]*h[n]=\text{input convolved with the impulse response}$

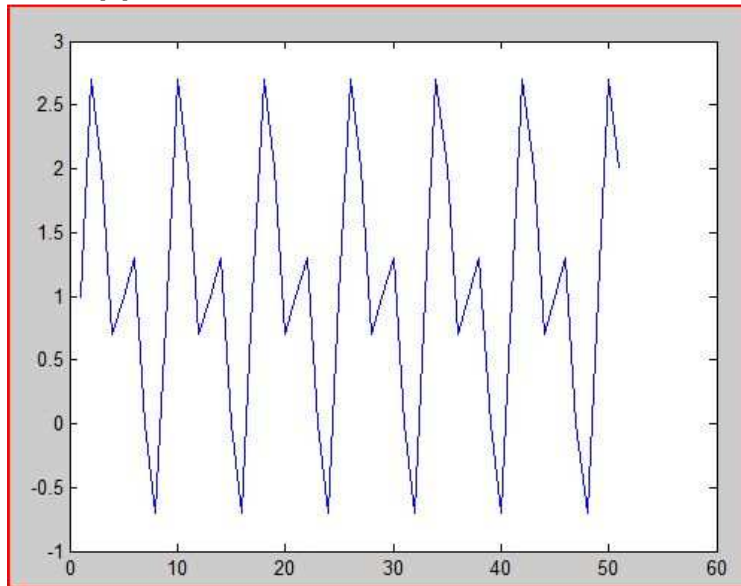
MatLab Commands used

```
n=(0:1:50);  
h=1.9*(-0.9).^n;  
x=1+sin(pi/4*n)+sin(pi/2*n);  
y=conv(x,h)  
plot(y);  
plot(x);  
plot(h);
```

Plot of $h[n]$



Plot of $x[n]$



Plot of $y[n] = x[n]*h[n]$

