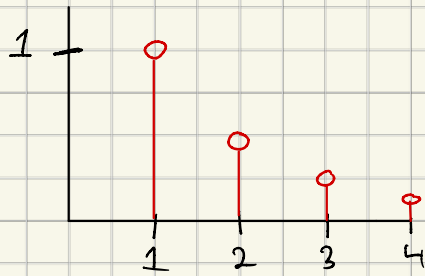


# Slide 32

a)  $x[n] = \left(\frac{1}{2}\right)^n u[n]$

$$u[n] = \begin{cases} 1, & n \geq 0 \\ 0, & n < 0 \end{cases}$$

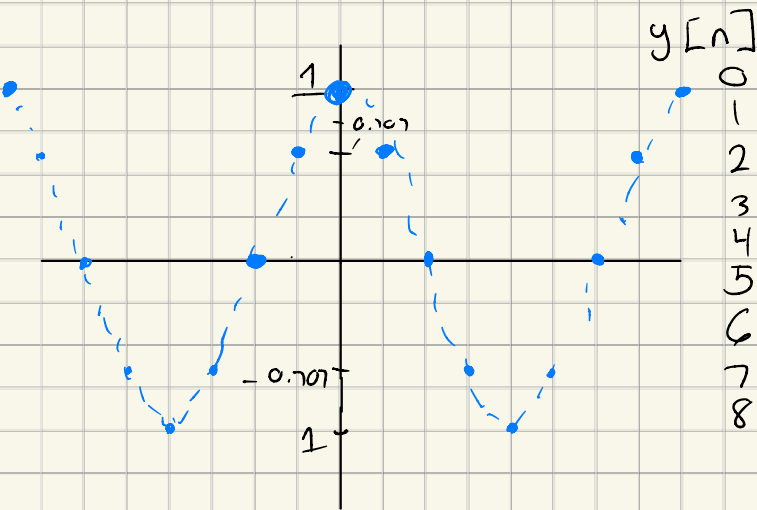
$\left(\frac{1}{2}\right)^n$  = result halved every ne sample



(b)  $y[n] = \cos\left(\frac{\pi n}{4}\right)$

Form  $\cos(\omega n)$   
where  $\omega = \pi/4$

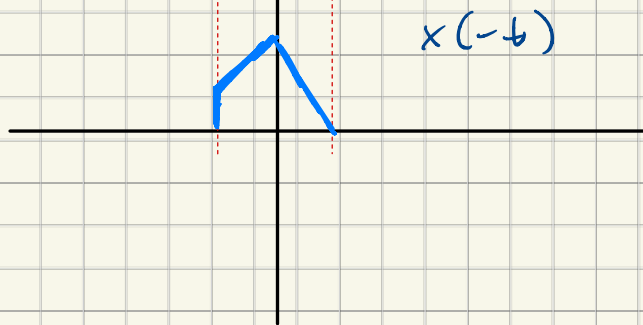
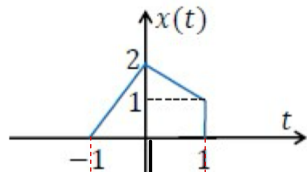
$$\text{Period} = \frac{2\pi}{\omega} = \frac{8\pi}{\pi} = 8$$



$y[n]$	$n$
1	0
0.707	1
0	2
-0.707	3
-1	4
-0.707	5
0	6
0.707	7
1	8

Decompose the signal shown into an even and odd parts

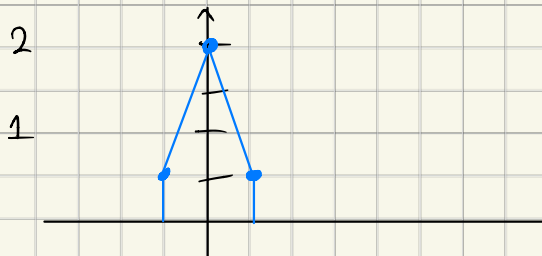
3



$x(t)$	
-1	0
0	2
1	1

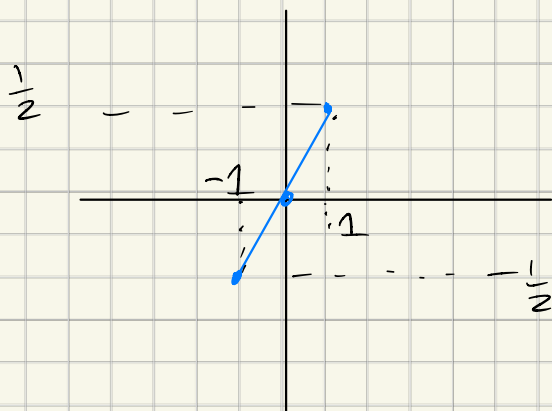
$x(-t)$	
-1	1
0	2
1	0

$$x_e(t) = \frac{x(t) + x(-t)}{2}$$



$x_e(t)$	
-1	1/2
0	2
1	1/2

$$x_o(t) = \frac{x(t) - x(-t)}{2}$$



$x_o(t)$	
-1	-1/2
0	0
1	1/2