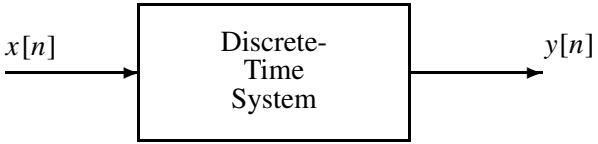
PROBLEM:

Consider the discrete time system below:



where $y[n] = (x[n+1] + x[n-1])/2$.

(a) Describe in words how the value $y[5]$ would be computed from the input sequence.

(b) Suppose that the input is the complex exponential signal

$$x[n] = Ae^{j\phi}e^{j\hat{\omega}n} \qquad -\infty < n < \infty$$

Determine an expression for the output $y[n]$.

(c) Use your result from part (b) to find the output of the above system due to the input

$$x[n] = e^{j(\pi/2)n}$$