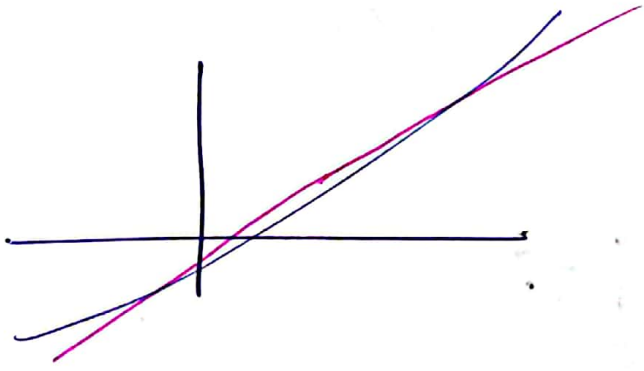


[ ] →  $\text{Cost} = \sum_i d(\underbrace{f_\theta(x_i) - y_i}_{\text{noise}}) + \underline{\underline{r(\theta)}}$



$f(x) = Ax + \alpha g(x)$

$f(x) = Ax + \epsilon$

Z =  $f(n) - g(n)$

$X = \begin{cases} 0 & p=0.3 \\ 1 & p=0.5 \\ 2 & p=0.2 \end{cases}$

$Y = 2X$

$Y = \begin{cases} 0 & p=0.3 \\ 2 & p=0.5 \\ 4 & p=0.2 \end{cases}$

$Z = X^2$

$Z = \begin{cases} 0 & p=0.3 \\ 1 & p=0.5 \\ 4 & p=0.2 \end{cases}$

$T = (X-1)^2$

$T = \begin{cases} 0 & 0.5 \\ 1 & \end{cases}$

$\Pr(X=0) + \Pr(X=2) = 0.3 + 0.2 = 0.5$

$$X = \begin{cases} 0 & p=0.5 \\ 1 & p=0.3 \\ 2 & p=0.2 \end{cases}$$

$$Y = \begin{cases} 0 & p=0.1 \\ 1 & p=0.8 \\ 2 & p=0.1 \end{cases}$$

$$Z = X + Y$$

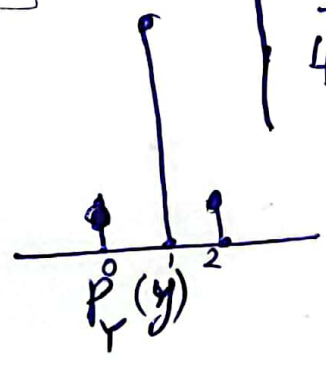
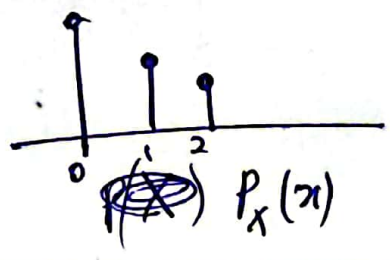
X, Y independent

$$Z = \begin{cases} 0 \\ 1 \\ 2 \\ 3 \\ 4 \end{cases}$$

$$\Pr(X=0, Y=0) = 0.5 \times 0.1$$

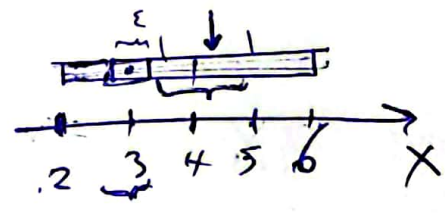
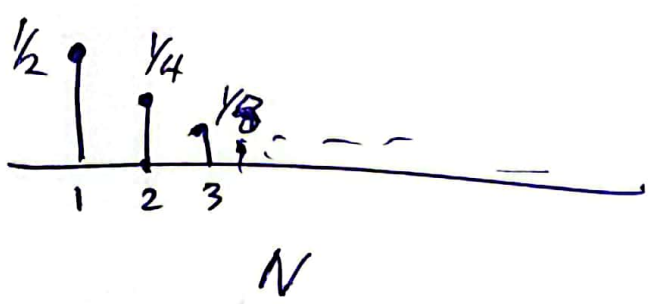
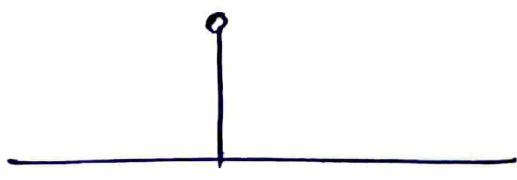
$$0.5 \times 0.8 + 0.3 \times 0.1 =$$

$$+ + =$$



Toss a coin.  $N \in \{1, 2, \dots\}$

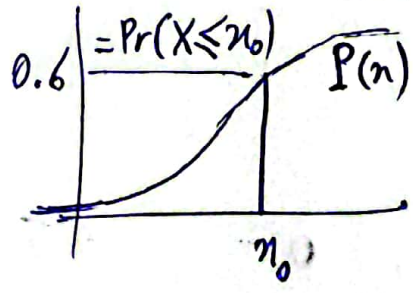
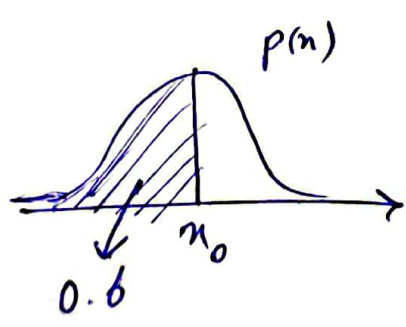
$$\frac{1}{2} \quad \frac{1}{4} \quad \frac{1}{8}$$



$p(x)$

$$P(x) = \Pr(X \leq x) = \int_{-\infty}^x p(n) dn$$

$-\infty$   
 $x_{min}$



توزیع متجمعی

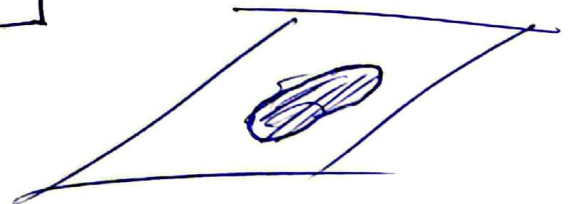
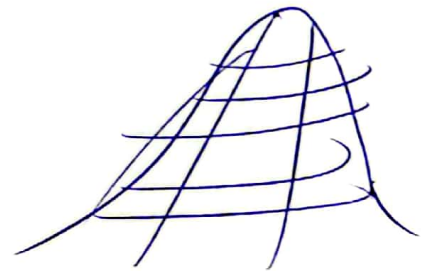
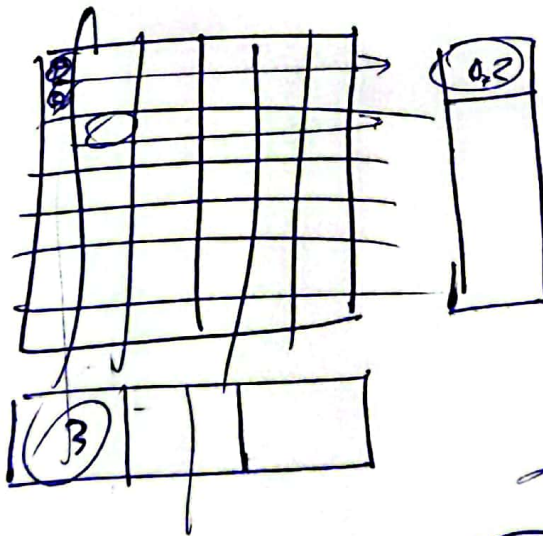
$$X = \begin{cases} 0 & 0.3 \\ 1 & 0.5 \\ 2 & 0.2 \end{cases}$$

$$X = \begin{matrix} 0 \\ 1 \\ 2 \end{matrix} \begin{matrix} 0.3 \\ 0.5 \\ 0.2 \end{matrix}$$

$$Y = \begin{matrix} 0.7 \\ 0.8 \\ 0.1 \end{matrix}$$

$$Z = X + Y = \begin{cases} 0 & \Pr(X=0, Y=0) \\ 1 & \Pr(X=0, Y=1) + \Pr(X=1, Y=0) \\ 2 & \\ 3 & \\ 4 & \end{cases}$$

		Y <sub>i</sub>		
		0	1	2
X =	0	0	0	0
	1	0	0	0
	2	0	0	0



$$X^2 + Y^2 = 1$$

