

$$\begin{cases} t_1 + t_2 = 12 \\ t_1 = 21 \end{cases} \rightarrow \begin{cases} t_1 + d + t_1 + 2d = 12 \\ t_1 + d = 21 \end{cases} \rightarrow \begin{cases} 2t_1 + 3d = 12 \\ t_1 + d = 21 \end{cases} \rightarrow \begin{cases} 2t_1 + 3d = 12 \\ -2t_1 - 10d = -42 \end{cases} \quad (1)$$

$$-7d = -30 \rightarrow d = \frac{30}{7}, t_1 = 1$$

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$$\frac{\sqrt{2}}{2} (-$$

$$\pm 12 \text{ (الف)} \quad (2)$$

$$\sin \theta = \frac{\xi}{\Delta} \rightarrow \cos \theta = \sqrt{1 - \frac{14}{\Delta^2}} = \frac{\sqrt{\Delta^2 - 14}}{\Delta} \quad \tan \theta = \frac{\xi}{\sqrt{\Delta^2 - 14}} \quad \cot \theta = \frac{\sqrt{\Delta^2 - 14}}{\xi} \quad (3)$$

$$\text{الف)} \frac{\Delta}{\sqrt{\Delta^2 + 14}} \times \frac{\sqrt{\Delta^2 - 14}}{\sqrt{\Delta^2 - 14}} = \frac{\Delta(\sqrt{\Delta^2 - 14})}{\Delta^2 - 14} = \xi(\sqrt{\Delta^2 - 14}) \quad (4)$$

$$\therefore \Delta^2 + 14 = (\Delta^2 + 14)(\xi\sqrt{\Delta^2 - 14})$$

$$\xi - 2\Delta = 0 \rightarrow \Delta = 2$$

$$\Delta^2 - 2\Delta - 14 = 0$$

$$(\Delta - 7)(\Delta + 2) = 0 \rightarrow \Delta = 7$$

Δ	-2	2	7
$\xi - 2\Delta$	+	+	-
$\Delta^2 - 2\Delta - 14$	+	-	+
P	+	-	-

$$(-2, 2] \cup (7, +\infty)$$

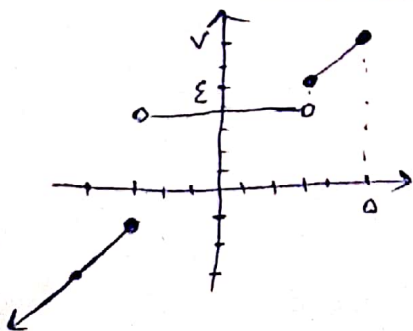
$$x_5 = \frac{\xi}{2(1)} = 2 \rightarrow y = 2^2 - \xi(2) - 7 = -7 \quad (2, -7) \text{ (الف)} \quad (5)$$

ب) دارای شیب منفرجه است

$$m = \frac{\Delta - 1}{1 - 2} = \frac{\xi}{-2} = -2$$

$$y - 1 = -2(x - 2)$$

$$y = -2x + 5$$



$$\begin{array}{c|c} x & y \\ \hline 2 & 5 \\ \hline \Delta & 2 \end{array}$$

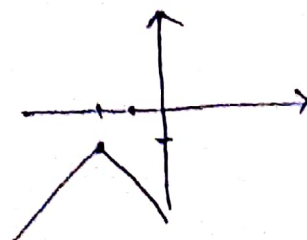
$$\begin{array}{c|c} x & y \\ \hline -2 & -1 \\ \hline -\xi & -2 \end{array}$$

$$f(0) = 2 \quad f(f(0)) = f(2) = 4$$

$$f(-5) = -5 \quad 4 + (-5) = -1$$

$$D = \mathbb{R}$$

$$R = (-\infty, -1]$$



$$2a+1=5 \rightarrow \underline{a=2} \quad \frac{b-1}{2} = 3 \rightarrow \underline{b=7} \quad (10)$$

$$\begin{aligned} \text{الف)} \quad & \begin{cases} \frac{2}{1} \times \frac{3}{2} \times \frac{1}{3} \rightarrow 12 \\ \frac{1}{2} \times \frac{3}{3} \times \frac{2}{1} \rightarrow 18 \end{cases} \quad 12+18=30 \\ \text{ب)} \quad & \frac{2}{1} \times \frac{3}{2} \times \frac{1}{3} \rightarrow 12 \end{aligned} \quad (11)$$

$$\text{الف)} \quad \binom{4}{2} = 15 \quad \text{ب)} \quad \binom{5}{2} = 10 \quad (12)$$

$$\begin{aligned} \text{الف)} \quad & \frac{1}{5} \times \frac{2}{4} \times \frac{3}{3} \times \frac{2}{2} \times \frac{1}{1} \times \frac{1}{1} \rightarrow 5! \\ \text{ب)} \quad & \begin{cases} \frac{5}{5} \times \frac{2}{4} \times \frac{1}{3} \rightarrow 20 \\ \frac{5}{4} \times \frac{1}{3} \times \frac{2}{2} \rightarrow 20 \\ \frac{1}{5} \times \frac{2}{4} \times \frac{3}{3} \rightarrow 20 \end{cases} \quad 20 \times 3 = 60 \quad \text{ب)} \quad 5! \end{aligned} \quad (13)$$

$$\begin{aligned} 5 \times \frac{n!}{(n-2)!} &= 4 \times \frac{n!}{(n-3)! \times 3!} \Rightarrow 5 \times \frac{n(n-1)(n-2)!}{(n-2)!} = 4 \times \frac{n(n-1)(n-2)!}{4} \\ &\Rightarrow 5n(n-1) = n(n-1)(n-2) \rightarrow n-2=5 \rightarrow \boxed{n=7} \end{aligned} \quad (14)$$

$$\begin{aligned} P(A \cup B) &= \frac{1}{3} + \frac{1}{4} - \frac{1}{6} = \frac{2}{4} = \frac{1}{2} \\ P(A - B) &= \frac{1}{3} - \frac{1}{6} = \frac{1}{6} \end{aligned} \quad (15)$$

$$\text{الف)} \quad P(A) = \frac{\binom{2}{1} + \binom{5}{2}}{\binom{9}{2}} = \frac{2+10}{36} = \frac{12}{36} = \frac{1}{3} \quad (16)$$

$$\text{ب)} \quad P(B) = \frac{\binom{2}{1} \binom{5}{1} + \binom{2}{2}}{\binom{9}{2}} = \frac{2 \times 5 + 1}{36} = \frac{11}{36} \quad (17)$$

ب) کو گنت

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