

آنها را برسم زاده - تطبیق ۱ - دوازدهم فصل B

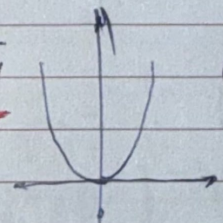
$$\text{الف) } \left. \begin{aligned} y_1^p &= r_{x_1}^r + r_{x_1+1}^r \\ y_r^p &= r_{x_r}^r + r_{x_r+1}^r \end{aligned} \right\} \xrightarrow{x_1=x_r} y_1^p = y_r^p \rightarrow y_1 = y_r \quad \text{تابع}$$

$$\text{ب) } x \cos y = y \cos x \xrightarrow{\text{مثال نقض}} x = \frac{\pi}{2} \rightarrow \frac{\pi}{2} \cos y = y \cos \frac{\pi}{2} \rightarrow \frac{\pi}{2} \cos y = y \times 0 \\ \rightarrow \frac{\pi}{2} \cos y = 0 \rightarrow \cos y = 0 \rightarrow y = 0, \pi, 2\pi, \dots \quad \text{تابع}$$

$$\text{ج) } \frac{x+y}{2} = \sqrt{xy} \rightarrow x+y - 2\sqrt{xy} = 0 \rightarrow (\sqrt{x} - \sqrt{y})^2 = 0 \rightarrow \sqrt{x} = \sqrt{y} \rightarrow x = y \quad \text{تابع}$$

$$\text{د) } y^p - xy^r + ry - rx = 0 \rightarrow y(y^r + r) - x(y^r + r) = 0 \rightarrow \frac{y(y^r + r)}{y^r + r} = x \rightarrow y = x \quad \text{تابع}$$

$$\text{و) } |y| + x = ry \xrightarrow{\sqrt{y} > 0} x^2 = ry - |y| \xrightarrow{\sqrt{y} > 0} x^2 = y \quad \text{تابع}$$



$$\text{ب) } [y], [x] = 1 \xrightarrow{x=1} y \in [0, 1) \quad \text{مثال نقض}$$

$$f(x) = \begin{cases} rx - b & x \geq r \\ a + rx & 0 \leq x \leq r \\ rx - b & x \leq -1 \end{cases} \rightarrow x = r \rightarrow rx - b = a + r \rightarrow a + b = 1r \quad \text{سوال ۳}$$

$$f(x) = \sqrt{a-bx-x^2} \geq 0 \rightarrow -1 \leq \sqrt{1-x^2} \rightarrow a-bx-x^2=0 \rightarrow rx^2-a=0 \quad \text{سوال ۱}$$

$$\rightarrow a-bx-x^2=0 \rightarrow a-bx-x^2=0 \rightarrow -a(a+b-1)=0$$

$$\rightarrow a+b-1=0 \rightarrow rx^2+b-1=0$$

$$\rightarrow b=-1, \frac{1}{r} \quad \text{if } b=\frac{1}{r} \rightarrow a=\frac{1}{r} \quad [a+b]a$$

$$a+b=r-1=1 \quad \text{if } b=-1 \rightarrow a=r \quad \checkmark$$

$$f(x) = \frac{r}{\sqrt{ax^2+bx+c}} \quad D_f = (-\infty, r) \rightarrow a=0$$

$$\rightarrow rx+b+c=0 \rightarrow rx+b=-c \rightarrow 0-rb-r(-b)$$

$$bx-rb \geq 0 \rightarrow bx > rb \quad b < 0 \rightarrow x < r \quad \rightarrow b$$

$$y = \sqrt{\frac{rx+r+ax+ab}{x+b}} \geq 0 \rightarrow (r+a)x+r+ab \rightarrow rx+a=0$$

$$\rightarrow a=-r$$

$$x+b > 0 \rightarrow x > -b \rightarrow -b=r$$

$$\rightarrow b=-r \quad \checkmark$$

$$a) \sqrt{x^2-x} \geq 0 \rightarrow x(x-1)(x+1) \geq 0 \rightarrow \begin{matrix} -1 & 0 & 1 \\ - & + & - \\ 0 & 1 & 0 \end{matrix}$$

$$Dy = [-1, 0] \cup [1, +\infty)$$



$$b) y = \frac{1}{\sqrt{|x|-1}} \rightarrow |x| > 1 \rightarrow x > 1 \Rightarrow Dy = \mathbb{R} - [-1, 1]$$

$$c) y = \sqrt[3]{\frac{1}{|x| - [x]}} \quad |x| + [x] \xrightarrow{x > 0} x + [x] \rightarrow x + \text{عدد صحيح} = W \quad (\text{سؤال})$$

$$\downarrow -x + [x] \Rightarrow Dy = \mathbb{R}^+ - W$$

$$b) \sqrt{x} + \sqrt{y} = 9 \rightarrow \sqrt{y} = 9 - \sqrt{x} \rightarrow \sqrt{x} \leq 9 \quad x \geq 0 \Rightarrow Dy = [0, 81]$$

$$9 - \sqrt{x} \geq 0 \rightarrow 9 \geq \sqrt{x} \rightarrow 81 \geq x$$

$$y = \frac{1}{\sqrt{[x - \frac{1}{r}] + [x + \frac{r}{r}]}} \quad [x - \frac{1}{r}] + [x + \frac{r}{r}] > 0 \quad (\text{سؤال})$$

$$r[x - \frac{1}{r}] + r > 0 \rightarrow [x - \frac{1}{r}] > -1$$

$$0 \leq [x - \frac{1}{r}] \rightarrow \frac{1}{r} \leq x \rightarrow \frac{1}{r} \leq x \rightarrow Dy = [\frac{1}{r}, +\infty)$$

$$y = \sqrt{1 - \log(x-a)} \quad x - a > 0 \rightarrow x > \frac{a}{r} \Rightarrow \frac{a}{r} = b \quad (\text{سؤال})$$

$$1 - \log(x-a) \geq 0 \rightarrow \log(x-a) \leq 1 \rightarrow x-a \leq 10$$

$$x \leq 10 + a \rightarrow x \leq \frac{10+a}{r} \quad \frac{10+a}{r} = c$$

$$c - b = \frac{10+a}{r} - \frac{a}{r} = \boxed{10}$$