

نام و نام خانوادگی: \_\_\_\_\_ باب فضا: \_\_\_\_\_ کلاس: \_\_\_\_\_ درس: A دخت‌دوازدهم

$$\begin{cases} f(x) - xf(-x) = 2|x| + 1 \\ f(x) + xf(-x) = 2|-x| + 1 \end{cases} \xrightarrow{x(-x)} \begin{cases} -xf(-x) + x^2 f(x) = -2x|x| - x \\ f(x) + xf(-x) = 2|-x| + 1 \end{cases}$$

$$(x^2 + 1)f(x) = -2x|x| - x + 2|-x| + 1$$

$$\xrightarrow{x=0} f(0) = \frac{-2 \cdot 0^2 - 0 + 1}{0^2 + 1} \left\{ \begin{array}{l} x < 0 \rightarrow f(x) = \frac{2x^2 + x + 1}{x^2 + 1} \\ x > 0 \rightarrow f(x) = \frac{2x^2 - x + 1}{x^2 + 1} \end{array} \right.$$

$$x=0 \rightarrow 2f(0) = 2 \rightarrow f(0) = 1 \Rightarrow x^2 = x \rightarrow f(x^2) + 1 = x^4 - 2x^2 + 2$$

$$\rightarrow f(x^2) = x^4 - 2x^2 + 1$$

$$yx - y = x^2 + x + 1 \rightarrow x^2 + (1-y)x + 1+y = 0 \rightarrow \Delta \geq 0 \rightarrow (1-y)^2 - 4(1+y) \geq 0$$

$$1+y^2-2y-1-4y \geq 0 \rightarrow y^2-6y-4 \geq 0 \rightarrow (y-3)^2 \geq 13 \rightarrow y \leq 3-\sqrt{13} \text{ or } y \geq 3+\sqrt{13}$$

$$R = \mathbb{R} - (-1, 4)$$

$$\text{الف) } -\frac{b}{ra} = \frac{0}{r} \rightarrow y = x \cdot \frac{0}{x^2+1} - \frac{0}{r} + 1 = -\frac{11}{1} \rightarrow R = \left[-\frac{11}{1}, +\infty\right)$$

$$\text{ب) } -\frac{b}{ra} = \frac{-4}{-2} = 2 \rightarrow y = -9 + 18 - 2 = 7 \Rightarrow R = [0, 7]$$

$$\text{ج) } \text{بزرگترین توان فرد است} \rightarrow R = \mathbb{R} \xrightarrow{\sqrt{\quad}} [0, +\infty)$$

$$\text{د) } \text{بزرگترین توان فرد است} \rightarrow R = \mathbb{R}$$

$$\text{الف) } R = (\mathbb{R} - \{3\}) \quad \text{ب) } R = [0, +\infty) - \{2\}$$

$$\text{ج) } \frac{x^2+3}{\sqrt{x^2+3}} + \frac{1}{\sqrt{x^2+3}} \rightarrow \sqrt{x^2+3} + \frac{1}{\sqrt{x^2+3}} \xrightarrow{x^2=0} \sqrt{3} + \frac{1}{\sqrt{3}} = \frac{4\sqrt{3}}{3} \rightarrow R = \left[\frac{4\sqrt{3}}{3}, +\infty\right)$$

$$\text{د) } x^2+4 + \frac{1}{x^2+4} - 4 \xrightarrow{x^2=0} 4 + \frac{1}{4} - 4 = \frac{1}{4} \rightarrow R = \left[\frac{1}{4}, +\infty\right)$$

$$\frac{r x^r + \varepsilon}{x^r - 1} = y \rightarrow x^r = \frac{y + r}{y - r} \rightarrow \frac{y + r}{y - r} > 0 \Rightarrow \frac{-r}{r - y} > 0 \Rightarrow R = \mathbb{R} - (-r, r]$$

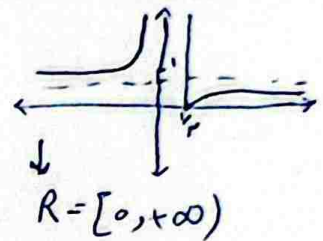
$$\left\{ \begin{array}{l} x^r = 0 \rightarrow -r \\ x^r = +\infty \rightarrow y = r \end{array} \right.$$

$$\Rightarrow R = (-\infty, -r] \cup (r, +\infty)$$

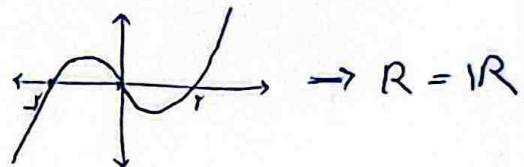
$$f(x) = \frac{r \sin x + r}{\sin x - r} \begin{cases} \sin x = -1 \rightarrow \frac{-r + \varepsilon}{-1 - r} = -\frac{1}{r} \\ \sin x = 1 \rightarrow \frac{r + \varepsilon}{1 - r} = -r \end{cases} \Rightarrow R = [-\infty, -\frac{1}{r}]$$

$$\text{الف) } y = \left| \frac{r x - 1}{r x} \right| \rightarrow \begin{cases} \text{مجاذبة} = \frac{r}{\varepsilon} \\ \text{مجاذبة} = 0 \end{cases} \Rightarrow \text{قصر محض}$$

$$\text{ب) } y = \sqrt{\frac{q(x-r)}{\varepsilon(-r+\infty)}} = \frac{r}{r} \Rightarrow R = \left\{ \frac{r}{r} \right\}$$



$$y = x|x| - r x \begin{cases} x > 0 \rightarrow x^r - r x \\ x < 0 \rightarrow -x^r - r x \end{cases}$$



$$y = f(|x|)$$

$$y = f(|x|) + 1$$

$$y = |f(|x|) + 1|$$

