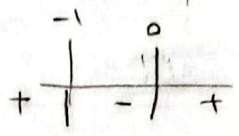


نام: یکتا جانوری

مقطع: نازدهم دبستان A

الف: $x^3 - 3x^2 + 3x$ $\xrightarrow{\text{تجزیه توان فرد}} K = \mathbb{R}$ ①

ب: $y = \frac{1}{x^2 - 2x} \rightarrow \frac{1}{y} = x^2 - 2x + 1 - 1 \rightarrow \frac{1}{y} = (x-1)^2 - 1 \rightarrow \frac{1+y}{y} = (x-1)^2$
 $x = \sqrt{\frac{1+y}{y}} + 1$

 $K = (-\infty, -1] \cup (-1, +\infty)$

الف: $x^2 - 5x + 1$ $\xrightarrow{\text{ent/2}} K = [4, +\infty)$ ②

ب: $-x^2 + 4x + 3$ $\xrightarrow{\text{ent/12}} K = (-\infty, 12]$

ج: $\sqrt{x^2 - 4x - 3}$ $\xrightarrow{\text{ent/2}} K = [0, +\infty)$

د: $\sqrt{-x^2 + 4x}$ $\xrightarrow{\text{ent/4}} K = [0, 4]$

الف: $x^3 - 5x^2 + 2x + 1 \rightarrow K = \mathbb{R}$

ب: $x^3 - 4x^2 + 3x + 2 \rightarrow K = \mathbb{R}$

ج: $\sqrt{x^3 - 4x^2 + 5x + 1} \rightarrow K = [0, +\infty)$

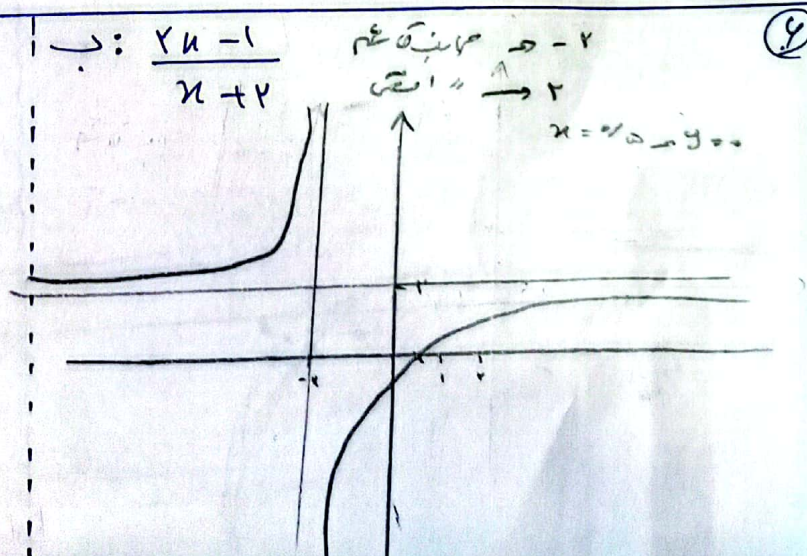
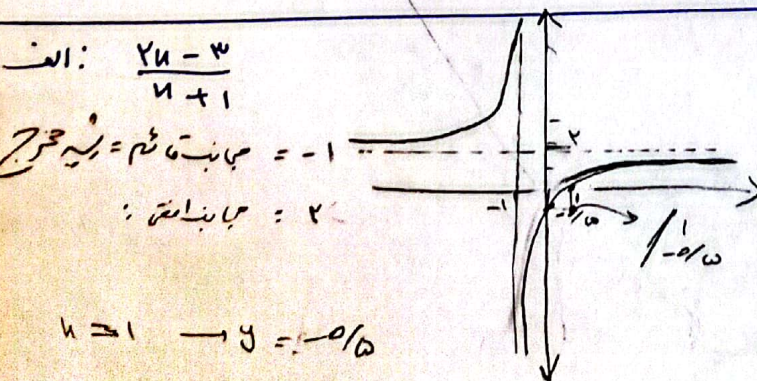
د: $(x^3 - 5x^2 + 3x + 1)^2 \rightarrow K = [0, +\infty)$

الف: $y = \frac{3x+1}{x-2} \rightarrow K = \mathbb{R} - \{3\}$

ب: $\frac{2x+1}{x+1} K = \mathbb{R} - \{1\}$

الف: $y = \sqrt{\frac{2x+5}{x+1}} \rightarrow (-\infty, +\infty) - \{-1\}$

ب: $y = \sqrt{\frac{3x+1}{x-2}} K = [0, +\infty)$



$$1: \sin u + \frac{1}{\sin u} \rightarrow K = (r, +\infty) \cup (-\infty, -r] \quad (V)$$

$$2: \frac{x^r + 1}{x^r} \rightarrow x^r + \frac{1}{x^r} \rightarrow K = (r, +\infty) \cup (-\infty, -r]$$

$$3: \frac{\sqrt[r]{x^r + 1}}{\sqrt[r]{x}} \rightarrow \sqrt[r]{x} + \frac{1}{\sqrt[r]{x}} \rightarrow K = (r, +\infty) \cup (-\infty, -r]$$

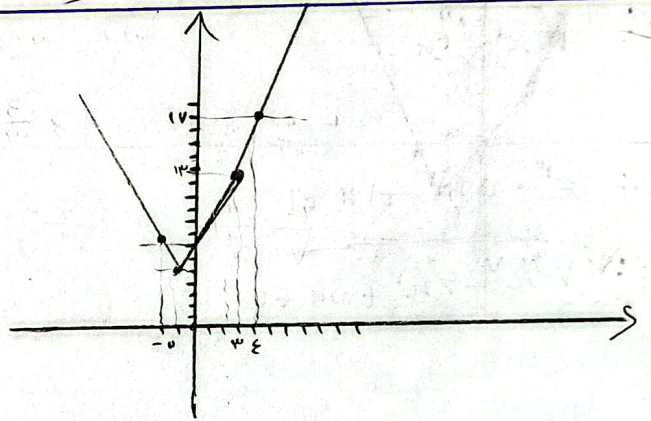
$$4: \sqrt{x} + \frac{1}{\sqrt{x}} \rightarrow (r, +\infty)$$

$$y = x^r + \frac{1}{x^r + r} \xrightarrow{\text{نقطة حرجية}} \left[\frac{1}{r}, +\infty\right) \quad (1)$$

$$5: \frac{x^r + \omega}{\sqrt{x^r + \varepsilon}} \xrightarrow{\text{نقطة حرجية}} \left[\frac{\omega}{r}, +\infty\right)$$

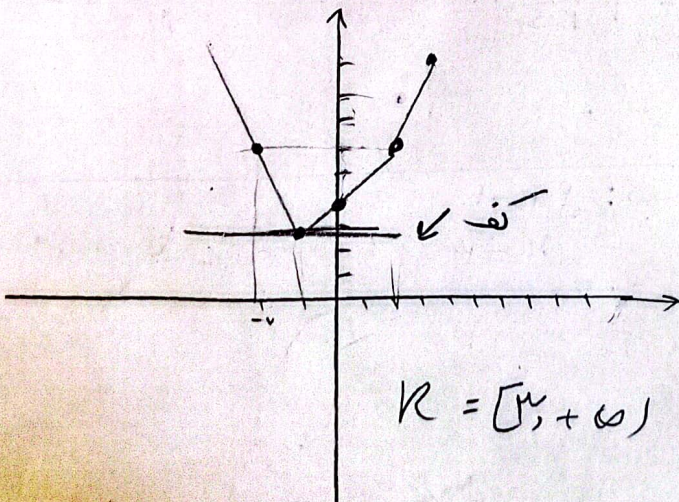
$$y = |u - r| + |ru + \varepsilon|$$

$$\begin{cases} ru + 1 & u > r \quad \frac{u/r + \varepsilon}{u/r + 1} \\ ru + v & -\frac{\varepsilon}{r} \leq u \leq r \quad \frac{u/r + \varepsilon}{u/r + 1} \\ -\varepsilon u - 1 & -\frac{\varepsilon}{r} > u \quad \frac{u/r + \varepsilon}{u/r + 1} \end{cases}$$



$$\text{الف: } y = |u - r| + |ru + r| \quad K$$

u	-r-1	-r	0	r	1	0
y	0	1	1	1	1	1



$$\rightarrow y = |ru - r| - |ru + 1| \quad (10)$$

u	-r-1	-r	0	1	r	1	0
y	0	1	1	-1	-1	-1	-1

