

19,20

نام و نام خانوادگی (پیدا) پاسخنامه تشریحی تکلیف شماره کلاس C_{200}

$$y = x^3 - 3x^2 + 3x \rightarrow y = x(x^2 - 3x + 3) \rightarrow \mathbb{R}$$

$\Delta < 0$ ریشه ندارد

$$y = \frac{1}{x^2 - 2x} \rightarrow x^2 y - 2xy - 1 = 0 \quad R_f = (-\infty, -1] \cup [0, +\infty) + \frac{-1}{1 - 1 + 1}$$

$$\rightarrow 4y^2 + (-4)(-1)(y) \geq 0 \rightarrow 4y^2 + 4y \geq 0 \rightarrow y(1+y) \geq 0$$

$$y = x^2 - 2x + 1 \rightarrow \frac{-\Delta}{\Delta a} = -\frac{(4 - 4)}{1} = [0, +\infty)$$

$$y = -x^2 + 4x + 3 \rightarrow \frac{-\Delta}{\Delta a} = 7 \frac{(16 + 12)}{1} = (-\infty, 12]$$

$$y = \sqrt{x^2 - 4x - 4} \rightarrow \frac{-\Delta}{\Delta a} = -\frac{(16 + 16)}{1} \rightarrow [0, +\infty)$$

$$y = \sqrt{4x - x^2} \rightarrow \frac{-\Delta}{\Delta a} = \frac{4(4)}{1} \rightarrow [0, 4]$$

$$y = x^3 - 2x^2 + 2x + 1 \rightarrow \mathbb{R}$$

$$y = x^3 - 4x^2 + 3x + 2 \rightarrow \mathbb{R}$$

$$y = \sqrt{x^2 - 4x^2 + 8x + 1} \rightarrow [0, +\infty)$$

$$y = \sqrt{x^2 - 4x^2 + (x+1)^2} \rightarrow [0, +\infty)$$

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

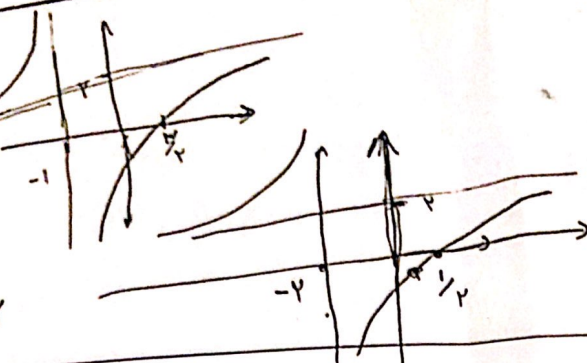
$$y = \frac{4x+1}{x+1} \Rightarrow \mathbb{R} - \{1\}$$

$$y = \sqrt{\frac{4x+1}{x+1}} = [0, +\infty) - \{1\}$$

$$y = \sqrt{\frac{3x+1}{4-x}} \rightarrow [0, +\infty)$$

$$y = \frac{rx - w}{x+1} \rightarrow y = \frac{q/c}{c} = r$$

$$x = -d/c = -1$$



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$$y = \frac{rx - 1}{x+1} \rightarrow y = \frac{q/c}{c} = r$$

$$x = -d/c = -1$$

$$y = \sin x + \frac{1}{\sin x} \rightarrow [-r, r] - \{0\} \quad (-\infty, -r] \cup [r, +\infty)$$

$$y = x + \frac{1}{x} \rightarrow (-\infty, -r] \cup [r, +\infty)$$

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

$$y = \sqrt{x} + \frac{1}{\sqrt{x}} = [r, +\infty)$$

1,0

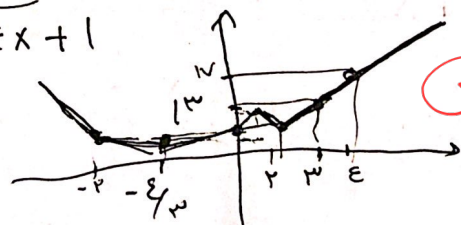
$$y = x + \frac{1}{x} \rightarrow \left[\frac{1}{r}, +\infty\right)$$

$$y = \sqrt{x+\varepsilon} + \frac{1}{\sqrt{x+\varepsilon}} = \left[\frac{\varepsilon}{r}, +\infty\right)$$

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$$y = |x - w| + |wx + \varepsilon| \rightarrow \frac{-\varepsilon/w}{\varepsilon x + 1}$$

$$\begin{aligned} & -\varepsilon - wx + w - x \downarrow \begin{cases} wx + \varepsilon \\ \varepsilon x + 1 \end{cases} \\ & \rightarrow -\varepsilon x - 1 \end{aligned}$$

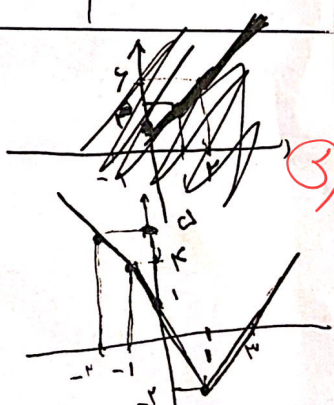
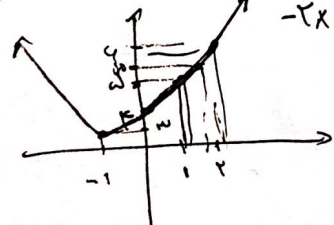


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$$y = |x - r| + |rx + r|$$

$$\begin{aligned} & -rx - r - x + r \quad | \quad rx + r \quad | \quad x - r + rx + r \\ & \downarrow \quad \downarrow \quad \downarrow \\ & -rx \quad +r-x \quad \hookrightarrow rx \\ & \quad \quad \quad \hookrightarrow x+r \end{aligned}$$

$$R_f = [r, +\infty)$$



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$$y = |x - r| - |x + 1|$$

$$\begin{aligned} & -x - r + x + 1 \quad | \quad x - r - x - 1 \quad | \quad (x - r) - (x + 1) \\ & \downarrow \quad \downarrow \quad \downarrow \\ & -r - x + 1 \quad -x - r - 1 \quad \hookrightarrow x - r - x - 1 \\ & \quad \quad \quad \hookrightarrow x - r \end{aligned}$$

$$R_f = [-r, +\infty)$$