

1

$y = \frac{x^2 + x + 2}{x - 1}$ $yx - y = x^2 + x + 2$ $x^2 + (1 - y)x + y + 2 = 0$

$\Delta = (1 - y)^2 - 4(y + 2) = 1 - 2y + y^2 - 4y - 8 = y^2 - 6y - 7$

$\Delta \geq 0 \Rightarrow y^2 - 6y - 7 \geq 0 \Rightarrow (y - 7)(y + 1) \geq 0$

$y \in (-\infty, -1] \cup [7, +\infty)$

عدد = سوال را بنویس و کامل تر بنویس !! الف) $y = 2x^2 - 5x + 1$

2) Min $\frac{-b}{2a} = \frac{5}{4}$ $f(\frac{5}{4}) = 2(\frac{25}{16}) - 5(\frac{5}{4}) + 1 = \frac{25}{8} - \frac{25}{4} + 1 = -\frac{15}{8}$

ب) $\frac{-b}{2a} = \frac{-9}{-2} = 4.5$ Max $f(4.5) = 2(20.25) - 5(4.5) + 1 = 41.5 - 22.5 + 1 = 19.5$

ج) $y = 12x^2 + 17x + 2$ $y \in (-\infty, -\frac{17}{24}] \cup [\frac{1}{4}, +\infty)$

الف) $y = \sqrt{1 + 3x}$ $x = \frac{y^2 - 1}{3}$ $y = 12x^2 + 17x + 2$ $y = 12(\frac{y^2 - 1}{3})^2 + 17(\frac{y^2 - 1}{3}) + 2$

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ج) $y = \sqrt{1 + 3x} + \frac{1}{\sqrt{1 + 3x}}$ $y \in [\frac{2}{\sqrt{3}}, +\infty)$

د) $y = x^2 + 2 + \frac{1}{x^2 + 2} - 2 \sim R_p: [-2, +\infty)$

الف) $y = \frac{3x^2 + 2}{x^2 + 1}$ $x^2 = \frac{y - 2}{y - 3}$ $y \in (-\infty, 4] \cup (5, +\infty)$

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$$f(x) = \frac{x^2 - x + \frac{1}{4}}{x^2 - x + 1}$$

$$D: x^2 - x + 1 \neq 0$$

$$\Delta = b^2 - 4ac = 1 - 4 = -3 < 0$$

$D = R$

$\rightarrow$

$$y x^2 - y x + 1 = x^2 - x + \frac{1}{4}$$

$$(y-1)x^2 + (y+1)x + \frac{3}{4} = 0$$

$\Delta \geq 0$

$$D = (-\infty, 1] \cup [4, +\infty)$$

$$y^2 + 1 - 2y - 4\left(\frac{3}{4}\right)(y-1) > 0$$

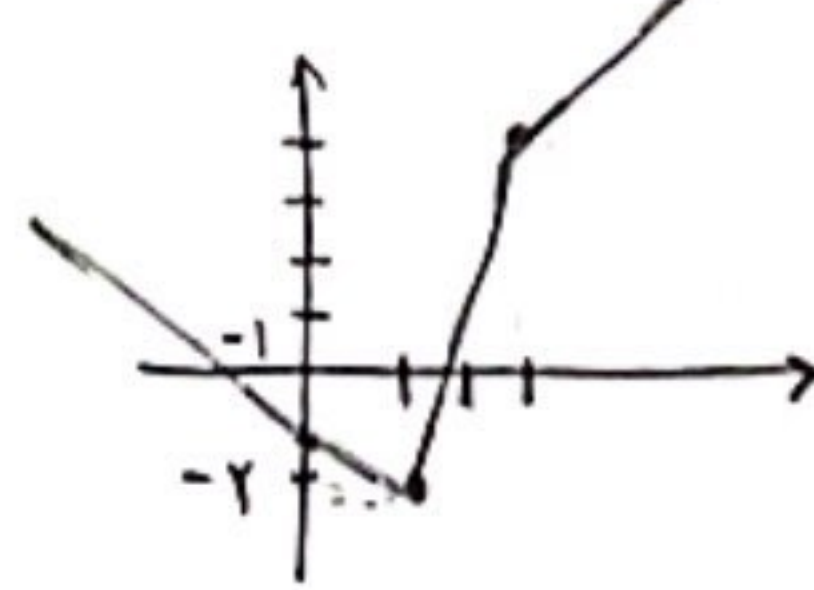
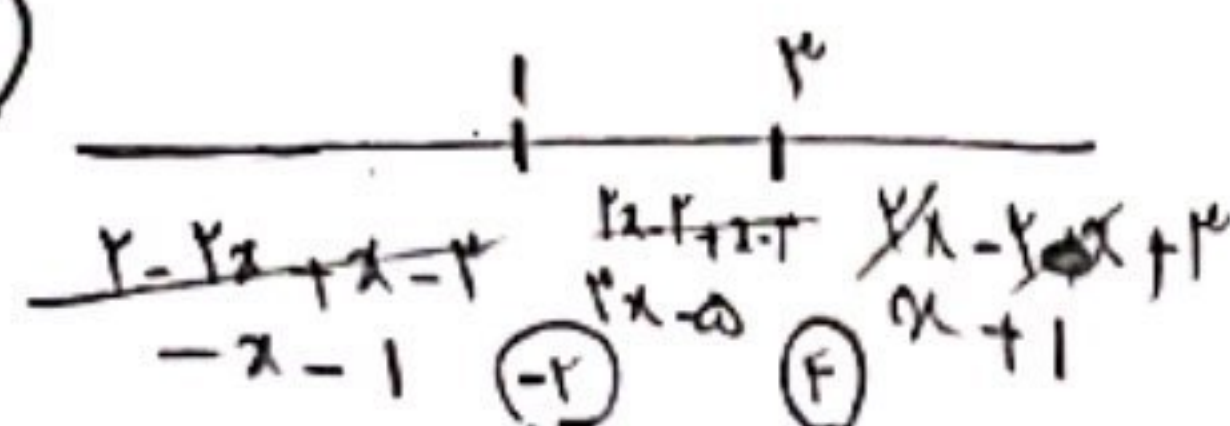
$$(y-1)^2 (y-1)\left(y - \frac{3}{1}\right) > 0$$

$$(y-1)(-3y) \geq 0 \Rightarrow y \leq 1$$

$$D = [-2, +\infty)$$

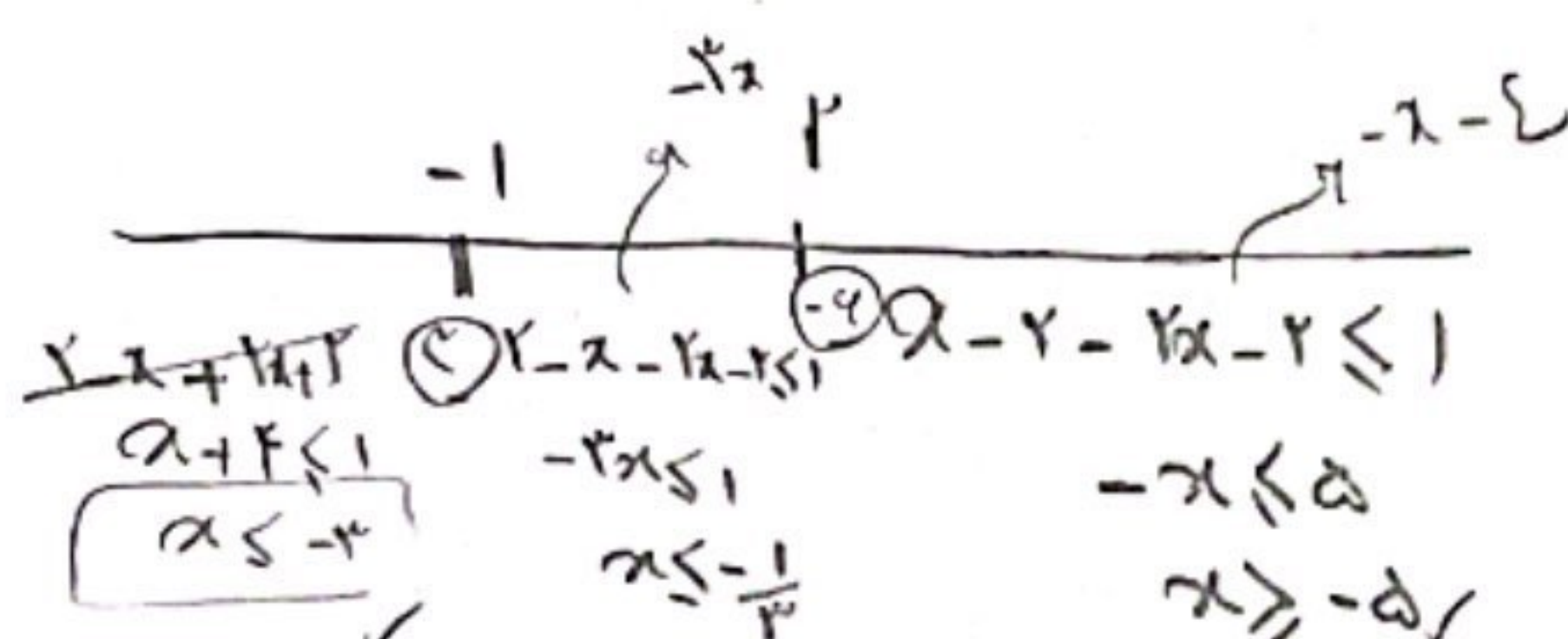
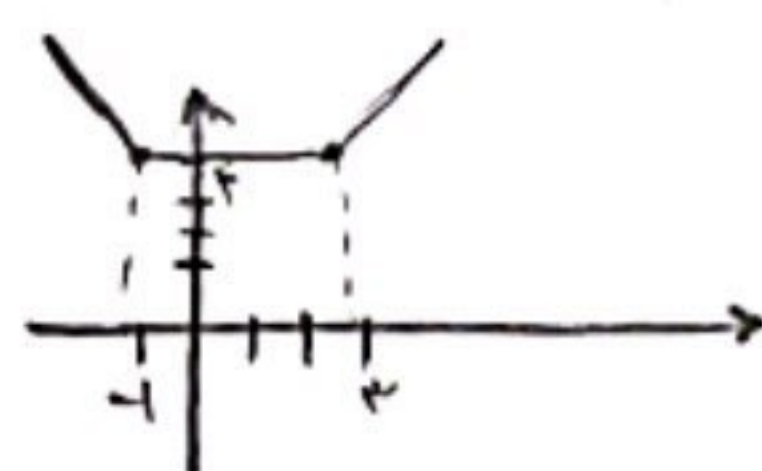
$$y \neq 1$$

الف)

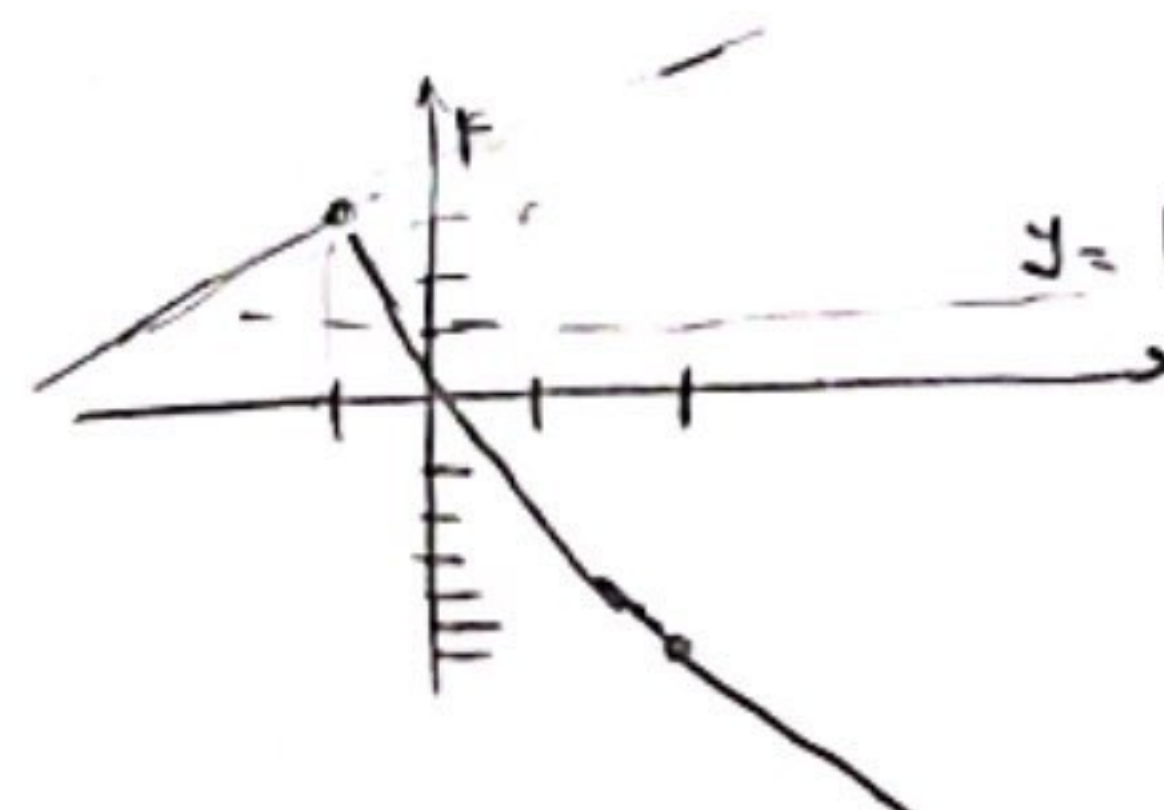


$$D = [4, +\infty)$$

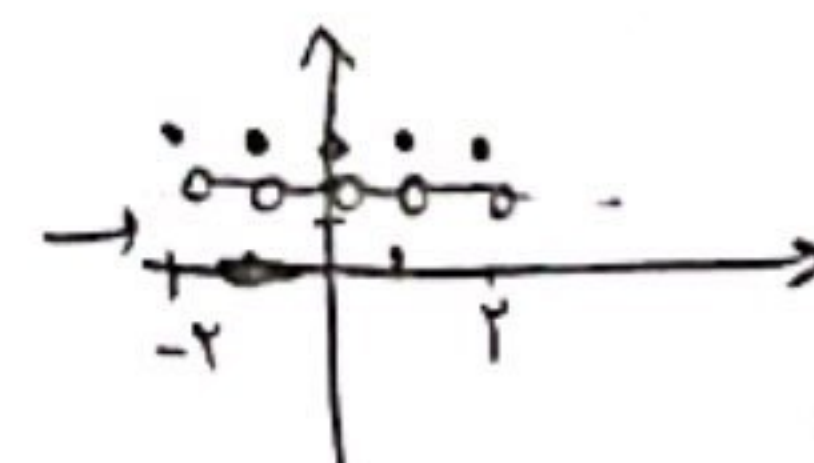
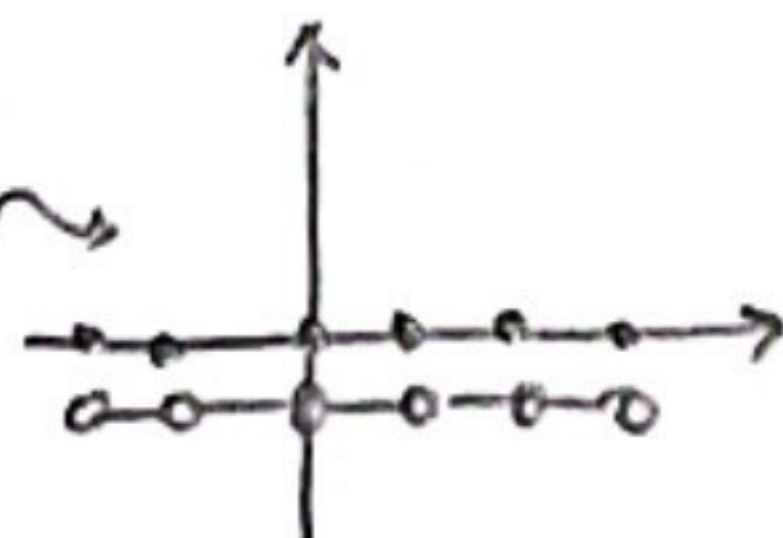
ب) طرایی است



$$D = (-\infty, 3) \cup (-\frac{1}{4}, +\infty)$$

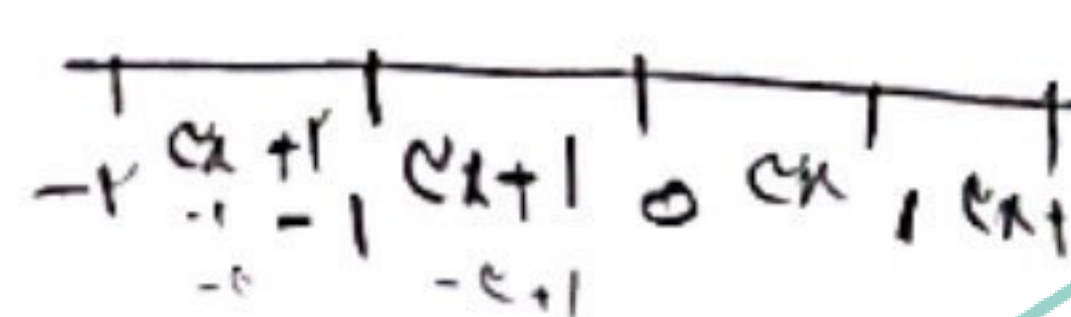
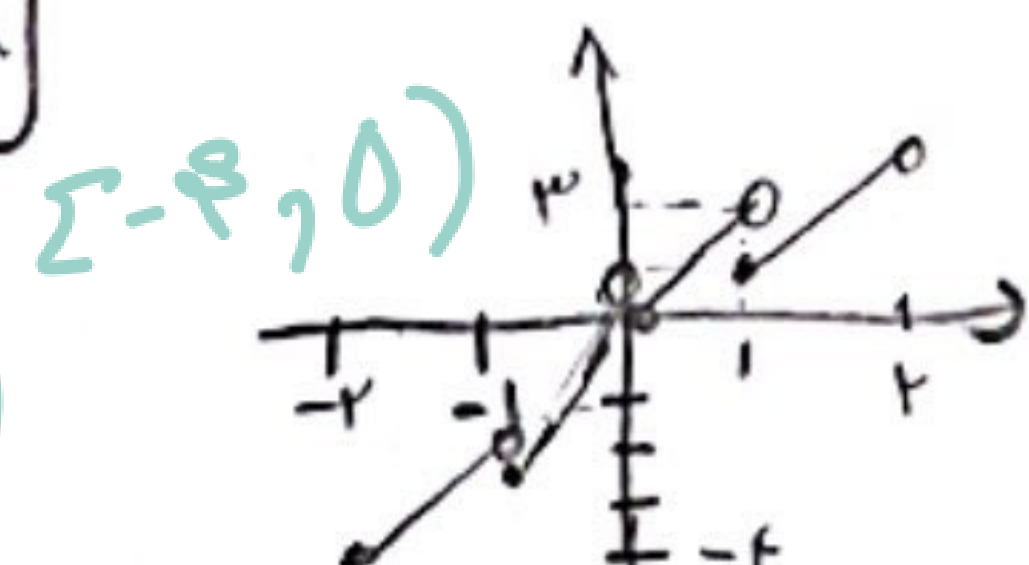


$$y = [x] + [-x] + \frac{3}{4}$$



$$D = [-2, 2]$$

$$y = [x]$$



نقطه‌های گسسته

$D = R$

$$[-2, 2]$$

$$y = \sin^2 x - \sin x + 1$$

$$1 - 1 + 1 = 1$$

$$1 + 1 + 1 = 3$$

$$D = [\frac{3}{2}, 3]$$

$$\frac{-b}{2a}$$

$$-\left(-\frac{1}{2}\right) = \frac{1}{2} \Rightarrow \frac{1}{2} = \frac{1}{2} + \frac{1}{2} = \frac{3}{2}$$

ب)

$$\sin^2 x = 1 \Rightarrow \sin x = 1$$

$$1 + 1 + 1 = 3$$

$$D = [1, 3]$$

$$\frac{1}{2} x \in \text{نقطه‌های گسسته}$$