

$$\left. \begin{aligned} \gamma_1^r &= r x^r + x \\ \gamma_r^r &= r x^r + x \end{aligned} \right\} \gamma_1^r = \gamma_r^r \rightarrow \gamma_1 = \gamma_r : \text{---} 1^{st} \text{ et}$$

$$2) x = \cos y \xrightarrow{x=0} k\pi + \frac{\pi}{2}$$

تابع نیست $\rightarrow (90^\circ, 170^\circ)$

تابع مبعث $|y| + x^2 = x + 3 \xrightarrow{x=1} |y| = 2 \rightarrow y = \pm 2$

$$c) \sqrt{x-r} + |y-r| = 0 \rightarrow \sqrt{x-r} = 0 \rightarrow \boxed{x=r} / |y-r| = 0 \rightarrow \boxed{y=r} \text{ — ist } C^0$$

الف) $y = \frac{x+t}{x^2-tx} = \frac{x+t}{x(x-t)}$ $D_f = \mathbb{R} - \{0, t\}$

$$2) y = \frac{x + f}{x^f - f x^r}$$

$$x^2(x^2 - t) = x^2(x - \sqrt{t})(x + \sqrt{t})$$

$$x^* = 0 \rightarrow x = 0 \quad \text{on } \{y\}$$

$$2 - \gamma = 0 \rightarrow \gamma = 2$$

$$\lambda + \gamma = 0 \rightarrow \lambda = -\gamma$$

$$\therefore y = \frac{x+1}{x^2 - v_x + 14} \rightarrow \Delta_{G_x} = b^x - f_{ac} = (-v)^x - f_x + 14 = -1a \quad D_f = 1R$$

ج) $y = \frac{x+r}{x^2+x+r} \rightarrow \Delta = b^2 - 4ac = 1 - 14 = -13 \quad D_f = 1R$
مخرج

$$y = \sqrt{4-x} + \sqrt{x-2}$$

$$4-x \geq 0 \rightarrow x \leq 4$$

$$x-2 \geq 0 \rightarrow x \geq 2$$

$$D_f = [v, y]$$

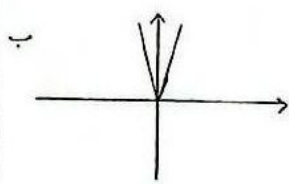
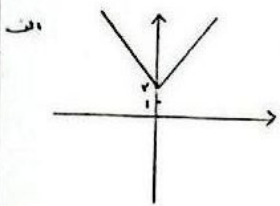
$$b) \frac{r^{x+1}}{x^{x+1}} \quad D_f = IR$$

۱- $\lambda \neq -1 \rightarrow$ امکان پذیر نیست $\rightarrow \lambda = -1 \rightarrow \lambda^2 + 1 = 0$ ، بقیه شرح

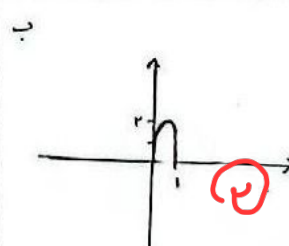
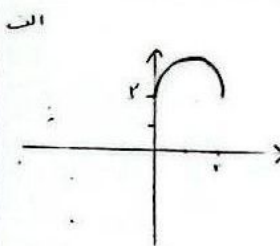
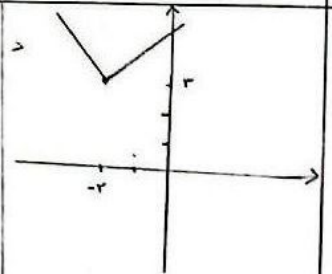
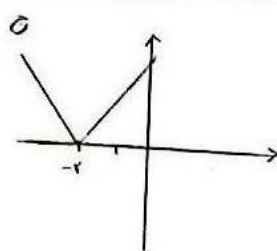
ج) $\frac{\sqrt{x-2}}{x-4}$ $x-2 \geq 0 \rightarrow x \geq 2$
 $x-4 = 0 \rightarrow x = 4$
 وبشبهه مخرج

$$D_f = [r + \infty) - \{t\}$$

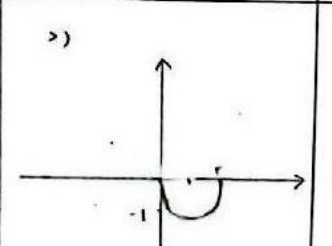
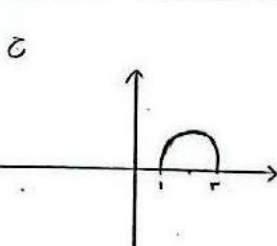
$$2) \frac{y^2x + y}{|x| + x^2} \xrightarrow{\text{L'Hôpital}} \frac{y^2}{1} = y^2 \rightarrow y = 0$$



چون اگر در غرب می شود
و اما غروب از نیز تر و جامع نرمی شود



چون $f(x)$ در ۲ ضرب شده دهانه
به ۱۰ جمع نمی شود

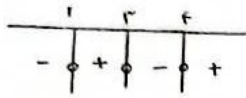


$$الف) y = (x-2)(x-3)(x-4)$$

$$x-2=0 \quad \boxed{x=2}$$

$$x-3=0 \quad \boxed{x=3}$$

$$x-4=0 \quad \boxed{x=4}$$



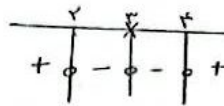
(2) ✓

$$ب) y = (x-2)(x-3)^2(x-4)$$

$$x-2=0 \quad \boxed{x=2}$$

$$x-3=0 \quad \boxed{x=3}$$

$$x-4=0 \quad \boxed{x=4}$$



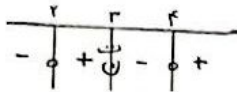
6

$$x-2=0 \quad \boxed{x=2}$$

$$x-4=0 \quad \boxed{x=4}$$

$$الف) y = \frac{(x-2)(x-4)}{x-3}$$

$$x-3=0 \quad \boxed{x=3}$$



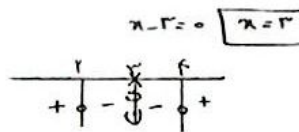
(2) ✓

$$x-2=0 \quad \boxed{x=2}$$

$$x-4=0 \quad \boxed{x=4}$$

$$ب) y = \frac{(x-2)(x-4)}{(x-3)^2}$$

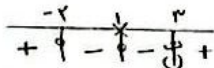
$$x-3=0 \quad \boxed{x=3}$$



7

$$الف) y = \frac{x^2 - 3x + 2}{x-3} \rightarrow \text{برای بخش پذیری به صورت فرایه است}$$

$$x-3=0 \quad x=3$$



(2) ✓

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

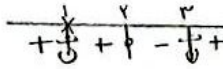
$$\frac{x^2 - 3x + 2}{x^2 + x - 2} \mid \frac{x-1}{x^2 + x - 2}$$

$$\begin{array}{r} x^2 - 3x + 2 \\ - (x^2 + x - 2) \\ \hline -4x + 4 \\ - (-4x + 4) \\ \hline 0 \end{array}$$

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

$$x-1=0 \quad \boxed{x=1}$$

$$x+2=0 \quad \boxed{x=-2}$$



8

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

$$\Delta = b^2 - 4ac = 1 - 4 = -3 < 0 \rightarrow \text{همواره مثبت، در این ریشه حقیقی ندارد}$$

(2) ✓

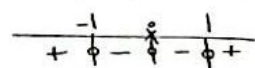
$$ب) y = \frac{x^2 + 3x + 2}{x^2 + 2x + 2}$$

$$\Delta = b^2 - 4ac = 9 - 4 = 5 > 0 \rightarrow \text{همواره مثبت}$$

$$D_f = 1R$$

$$\Delta = b^2 - 4ac = 4 - 4 = 0 \rightarrow \text{همواره مثبت}$$

$$\begin{array}{l} x^2 = 0 \quad \boxed{x=0} \\ x-1=0 \quad \boxed{x=1} \\ x+1=0 \quad \boxed{x=-1} \end{array}$$

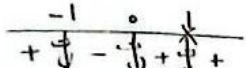


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$$الف) y = \sqrt{\frac{x^2 - 1}{x - 2}} \rightarrow \frac{x^2 - 1}{x - 2} \geq 0$$

$$x(x-1)(x+1)$$

$$\boxed{x=1} \quad \boxed{x=-1} \quad \boxed{x=2}$$



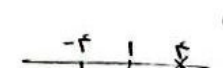
$$D_f = (-\infty - 1) \cup (0, 1) \cup (1 + \infty)$$

(2) ✓

$$ب) y = \sqrt{\frac{x^2 - 14}{x^2 - 4x + 4}}$$

$$\frac{x^2 - 14}{x^2 - 4x + 4} \geq 0$$

$$\boxed{x=1} \quad \boxed{x=4}$$



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

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