



Date :

Subject :

رياضيات

أبجديات

B

الرياضيات

(الف)

$$y = \frac{x+2}{4x^3 - 2x^2 + 11x - 15}$$

مخرج $\neq 0$

$$4x^3 - 2x^2 + 11x - 15 = (x-1)(4x^2 - 16x + 15) \neq 0$$

 $\downarrow$
 $x \neq 1$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

 $\left\{ \begin{array}{l} x \neq 15 \\ x \neq 1/4 \end{array} \right.$

$$D_f = \mathbb{R} - \{2, 5, 1, 15, 1/4\}$$

(ب)

$$y = \frac{x+2}{2x^3 - x^2 - 11x - 5}$$

$$2x^3 - x^2 - 11x - 5 = (x+1)(2x^2 - 3x - 5) \neq 0$$

 $\downarrow$
 $x \neq -1$

$$2x^2 - 3x - 5 = (x-2)(x+5)$$

$$D_f = \mathbb{R} - \{-1, 2, -5/2\}$$

$$x \neq \frac{-2}{2} = -1$$

(الف)

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

$$2-2x \geq 0 \rightarrow x \leq 1$$

$$x - \sqrt{2-2x} \neq 0 \rightarrow x \neq \sqrt{2-2x}$$

$$\rightarrow x^2 \neq 2-2x \rightarrow x^2 - 2x + 2 \neq 0$$

$$\rightarrow (x-1)(x-2) \neq 0 \rightarrow \left\{ \begin{array}{l} x \neq 1 \\ x \neq 2 \end{array} \right.$$

$$D_f = (\infty, \frac{1}{2}] - \{1\}$$

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$$1) y = \frac{x+1}{x-\sqrt{x-1}}$$

$$x-1 \geq 0 \rightarrow x \geq 1$$

$$x-\sqrt{x-1} \neq 0 \rightarrow x \neq \sqrt{x-1}$$

$$D_f = \left(\infty, \frac{1}{2} \right]$$

$$\rightarrow x \neq \sqrt{x-1} \rightarrow x - \sqrt{x-1} \neq 0$$

$$\rightarrow (x-1)(x-1) \neq 0 \quad \left\{ \begin{array}{l} x \neq 1 \\ x \neq 1 \end{array} \right.$$

$$2) y = \frac{\sin x}{\cos x - 1}$$

$$\cos x - 1 \neq 0 \rightarrow \cos x \neq 1$$

$$D_f = \mathbb{R} - \left\{ 2k\pi + \frac{\pi}{2}, 2k\pi - \frac{\pi}{2} \right\}$$

$$3) y = \frac{\cos x + 1}{\sin x + 1}$$

$$\sin x + 1 \neq 0 \rightarrow \sin x \neq -1$$

$$D_f = \mathbb{R} - \left\{ 2k\pi + \frac{3\pi}{2}, 2k\pi - \frac{\pi}{2} \right\}$$

$$4) y = \frac{\tan x + 1}{\cot x - 1}$$

$$\rightarrow \frac{\sin}{\cos} + 1$$

$$\frac{\cos}{\sin} - 1$$

$$\cos \neq 0, \sin \neq 0$$

$$\cot x \neq 1$$

$$D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{4}, \frac{k\pi}{2} \right\}$$

$$5) y = \frac{\sin x + 1}{\sin x - 1}$$

$$\sin x - 1 \neq 0 \rightarrow \sin x \neq 1$$

$$\rightarrow \sin x \neq \pm \frac{\sqrt{2}}{2}$$

$$D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{4}, k\pi - \frac{\pi}{4} \right\}$$

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$$b) x^2 - 5x + 4 > 0$$

$$\begin{array}{c} 2 \quad 4 \\ + \quad - \quad - \quad + \end{array}$$

(4)

$$(\infty, 2) \cup (4, \infty)$$

$$c) x^2 - 6x + 5 < 0$$

$$\begin{array}{c} 1 \quad 5 \\ + \quad - \quad - \quad + \end{array}$$

$$(1, 5)$$

$$d) x^2 + 9x + 4 > 0$$

$$\begin{array}{c} -4 \quad -1 \\ + \quad - \quad - \quad + \end{array}$$

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

$$e) x^2 - 7x + 6 < 0$$

$$\begin{array}{c} 1 \quad 6 \\ + \quad - \quad - \quad + \end{array}$$

$$[1, 6]$$

$$f) \frac{x^2 - 3x + 2}{x - 5} < 0$$

$$\begin{array}{c} 1 \quad 2 \quad 5 \\ - \quad + \quad - \quad - \quad + \end{array}$$

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$$(\infty, 1) \cup (2, 5)$$

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

$$(-\infty, -1] \cup (2, +\infty)$$

$$\text{ان} \rightarrow y = \frac{\sqrt{x^2 - 5x + 3}}{\sqrt{x^2 - 1}} \quad \frac{1^+}{-\infty - \infty +} \quad (V)$$

$$D_f = [2, +\infty)$$

$$\rightarrow y = \frac{\sqrt{x^2 - 5x + 3}}{\sqrt{x^2 - 1}} \quad x^2 - 1 \neq 0 \rightarrow x \neq \pm 1$$

$$D_f = \mathbb{R} - \{1, -1\}$$

$$\text{ان} \rightarrow y = \log(x^2 - 3x) \quad x^2 - 3x > 0 \quad (V)$$

$$(-\infty, 0) \cup (3, +\infty)$$

$$\rightarrow y = \log \frac{14 - x^2}{|x| - 2} \quad \begin{aligned} 14 - x^2 > 0 &\rightarrow -\sqrt{14} < x < \sqrt{14} \\ |x| - 2 > 0 &\rightarrow |x| > 2 \rightarrow x > 2 \text{ or } x < -2 \end{aligned}$$

$$D_f = (-\sqrt{14}, -2) \cup (2, \sqrt{14}) - \{2, -2\} \quad |x| \neq 1 \rightarrow x \neq \pm 1 \quad x < -2$$

$$\frac{0}{-1} \quad \frac{0}{-1} \quad \frac{0}{1} \quad \frac{0}{1}$$

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$$g = \log \frac{x^2 - \sqrt{x+1}}{x-1}$$

$$I \quad x^2 - \sqrt{x+1} > 0 \quad \frac{x^2}{x-1} > 0$$

$$D_f = (-1, 1) - \{0\}$$

$$II \quad 1-x > 0 \rightarrow x < 1$$

$$III \quad 1-x \neq 1 \rightarrow x \neq 0$$

$$II \quad \sqrt{x^2 - 11x + 21} + \log \sqrt{x^2 - x} \quad I \quad x^2 - 11x + 21 > 0 \quad \frac{x}{x-1} > 0$$

$$(\infty, 4] \cup [7, \infty)$$

$$II \quad x^2 - x > 0 \rightarrow -1 < x < 1$$

$$III \quad \sqrt{x^2 - x} > 0 \rightarrow x^2 - x > 0$$

$$\rightarrow x < 0 \text{ or } x > 1$$

$$III \quad x > 0, x \neq 1$$

$$D_f = (0, 4] - \{1\}$$

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

سريع (1)

	-1	0	1
$x^2 - x$	+	+	-
$x^2 + x$	+	+	+
$P(x)$	+	-	-

پارامونت

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$$y = \sqrt{\frac{x-f(x)}{f(x)}}$$

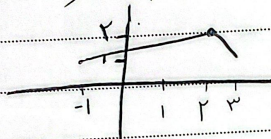
$$\begin{array}{c|cccc} x & -2 & -1 & 2 & 3 \\ \hline f(x) & + & - & + & - \end{array}$$

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$$\frac{x-f(x)}{f(x)} \geq 0 \Rightarrow f(x) \neq 0$$

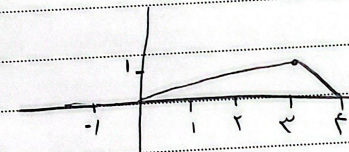
$$D_f = (-\infty, -2) \cup (-1, 2) \cup (3, +\infty)$$

(الف)

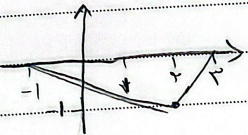


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(ب)



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