

19.5 $(x+z)^2 + (y+w)^2 = (1, -2)$ -1

$(x+z)^2 + (y+w)^2 = 0 \Rightarrow x+z=0, y+w=0$

$2x^2 + 2 - 4x + y^2 + 4 + 4y = 0 \Rightarrow x^2 - 2x + y^2 + 2 + 4y = 0$ (2)

$x^2 - 2x + 1 + y^2 + 4y + 4 = -3 \Rightarrow (x-1)^2 + (y+2)^2 = -3$

$f(a) = a^2 + 4a \Rightarrow a^2 + 4a = 2a + 2 \Rightarrow a^2 + 2a - 2 = (a+1)(a-1) = 0$ a > 0

$f(a) = 2a + 2$ (2)

$f(1) = 1^2 + 4 \cdot 1 = 5$ ✓

$|a| \geq 2 \Rightarrow a \geq 2 \text{ or } a \leq -2$ (2)

$a+1 \leq -2 \Rightarrow a \leq -3$

$f(-2) = 2 \cdot 9 - 4 = 14$

$f(-2) = -4 + a \Rightarrow a = 18$ (2) ✓

$a + a \geq 0 \Rightarrow a \geq \frac{a}{2}$ (1)

$b - 2a \geq 0 \Rightarrow \frac{b}{2} \geq a$ (2)

$\frac{a}{2} = \frac{b}{2} = 2$ (2)

$\frac{2}{2} = 1$ ✓

Diagram showing intervals on a number line: $\frac{a}{2}$ and $\frac{b}{2}$ are marked, with $\frac{a}{2} \geq \frac{b}{2}$.

الف) $y = \sqrt{\frac{9x+1}{|x-1|}} + \sqrt{\frac{4-x}{x^2+2x+5}}$ -a

$\frac{x+1}{|x-1|} \geq 0$ (2)

Diagram showing intervals on a number line: -1 and 1 are marked, with $x < -1$ and $x > 1$ being the solution set.

$\frac{4-x}{x^2+2x+5} \geq 0$ (2)

Diagram showing intervals on a number line: -1 and 3 are marked, with $-1 < x < 3$ being the solution set.

$\bigcap (2) = [-1, 3) \cup (1, 6]$ ✓

$\Delta = 4 - 19 = -15 < 0$

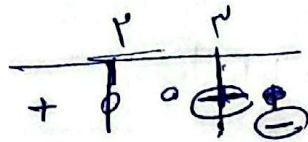
$f(1) = 1^2 + 4 \cdot 1 = 5$

$$\Rightarrow \sqrt{x-4} + \sqrt{1-x}$$

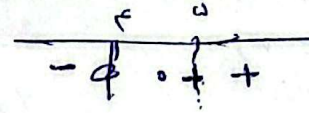
$$[x-4] \geq 0$$

$$[1-x] \geq 0$$

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$$1-x \geq 0$$



$$[4, +\infty)$$

$$(-\infty, 1]$$

$$[4, +\infty) \cap (-\infty, 1] = \emptyset$$

$$Pf = \emptyset \quad \checkmark$$

$$a) \quad y = \sqrt{\frac{x^2 - x - 4}{x^2 - 12x^2 + 44}}$$

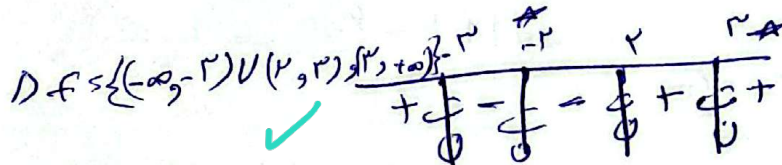
$$\Rightarrow y = \sqrt{\frac{(x-4)(x+1)}{(x-2)(x-9)}}$$

$$\begin{aligned} x &= 4 & -4 \\ x &= -1 & x = \pm 2 \\ A=4 & \Rightarrow x^2-4 & \\ A=9 & \Rightarrow x^2-9 & \\ & \Rightarrow x = \pm 3 \end{aligned}$$

$$x=2 \quad x=-2$$

$$x = \pm 2, \quad x = \pm 3$$

$$x \geq 0 \text{ راجع به}$$



(2)

$$b) \quad \text{مربعی جذبات} = 0$$

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

$$x^2 - x - 4 = (x-4)(x+1)$$

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

$$(x^2 + x - 4) = (x+3)(x-1)$$

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

$$Pf = \{(-\infty, -3), [-2, -1), [1, 2), [3, +\infty)\} \quad \checkmark$$

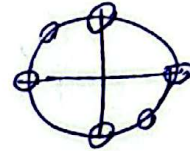
الف) $g = \sqrt{[n]-2}$ $[n]-2 \geq 0 \Rightarrow [n] \geq 2$ $-n \geq 2 \Rightarrow n \leq -2$ ✓

ب) $g = \frac{0n^2 + 6}{[n]^2 - 2[n] - 2}$ $[n]^2 - 2[n] - 2 \neq 0$ $([n]-2)([n]+1)$ (1, 0, 5)
 $[n] \neq 2 \Rightarrow n \neq [2, 2]$ ✓
 $[n] \neq -1 \Rightarrow n \neq [-1, 0]$ ✓
 $Df = R - \{(-1, 0) \cup [2, 2]\}$

الف) $\cot x = \frac{\cos}{\sin} \Rightarrow \sin \neq 0$ $\tan x \neq 0 \Rightarrow \tan x \neq 1$ - 1

$\tan x = \frac{\sin}{\cos} \Rightarrow \cos x \neq 0$

$Df = R - \{\frac{k\pi}{2}, k\pi - \frac{\pi}{2}\}$ ✓



(1, 0, 5)

ب) $g = \sqrt{1 - \frac{1}{2}\sin^2 x} \Rightarrow 1 - \frac{1}{2}\sin^2 x \geq 0$ $1 \geq \frac{1}{2}\sin^2 x \Rightarrow \frac{1}{2} \geq \sin^2 x$

$\frac{1}{2} \geq \sin^2 x \Rightarrow \frac{1}{\sqrt{2}} \geq |\sin x|$ ✓



$Df = \{k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4}\}$

الف) $g = \sqrt{1 - \log_{\frac{1}{2}}(n-1)}$ $1 - \log_{\frac{1}{2}}(n-1) \geq 0$ $1 \geq \log_{\frac{1}{2}}(n-1)$ - 9
 $\frac{1}{2} \leq n-1 \Rightarrow 1.5 \leq n$ $\mathbb{C} \cap \mathbb{P} \Rightarrow \{n \geq 1.5\}$ ✓
 $n-1 \geq 0 \Rightarrow n \geq 1$ $\mathbb{C} \cap \mathbb{P} \Rightarrow \{n \geq 1\}$ ✓

ب) $g = \frac{\sqrt{n^2 - n}}{1 - \log_{\frac{1}{2}}(n^2 - n)}$

$n^2 - n \geq 0 \Rightarrow n(n-1) \geq 0$ $\frac{n}{n-1} \geq 1$

$1 - \log_{\frac{1}{2}}(n^2 - n) \neq 0$ $1 \neq \log_{\frac{1}{2}}(n^2 - n)$ $(-\infty, 0) \cup [1, +\infty)$ ①

$n^2 - n > 0$

$n \neq n^2 - n \Rightarrow n^2 - n - n \neq 0$

$n(n-2) > 0$

$n \neq \frac{n}{2}$ $(n-2)(n+1)$ $\mathbb{C} \cap \mathbb{P} \Rightarrow \{n \neq 2\}$ ✓

$\frac{n}{n-2} \geq 1$

$(-\infty, 0) \cup (2, +\infty)$ ②

$\mathbb{C} \cap \mathbb{C} \cap \mathbb{P} = (-\infty, 0) \cup (2, +\infty)$

$-\{2, -1\}$ ✓

سب سے بڑا

$$a) g = \sqrt{r^2 a - n^2} - 1$$



$$r^2 a - n^2 - 1 \geq 0 \Rightarrow r^2 a - n^2 \geq 1 \quad (P)$$

$$b) g = \left(\frac{r^2 a + a}{r^2 a + r} \right)!$$

$$\begin{array}{c} \phi \quad \psi \quad (n+1)(n+1) \\ \frac{\phi}{- \phi} + \frac{\psi}{- \psi} \quad \begin{array}{c} (-1) \quad (-1) \\ (-1) \quad (-1) \end{array} \\ -1 \times -1 = 1 \quad -1 \times -1 = 1 \end{array}$$

$$\frac{r^2 a + a}{r^2 a + r} \in W \Rightarrow n = \frac{-(FW - a)}{(rW - r)} \Rightarrow n = \frac{a - FW}{rW - r}$$

$$\left\{ n \mid n = \frac{a - Fk}{rk - r}, k \in W \right\} \quad \checkmark$$