

۱۹، ۷۵

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S_1 $\xrightarrow[\text{ملائی}]{\text{تبدیل به}} \frac{\omega+z}{\varepsilon} = \frac{\sqrt{\omega}+1}{2} \Rightarrow \omega+z=2\sqrt{\omega}+2 \Rightarrow z=2\sqrt{\omega}+(-2)=2\sqrt{\omega}-2$

$\frac{S_2}{S_1} = \frac{\varepsilon(2\sqrt{\omega}+2)}{\varepsilon \times \omega} = \frac{2\sqrt{\omega}+2}{\omega}$

S_2 $\xrightarrow{\varepsilon} 2\sqrt{\omega}-2+0=2\sqrt{\omega}+2$

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$z^2+y^2=z^2 \Rightarrow z^2+y^2=\left(\frac{1+\sqrt{\omega}}{\varepsilon}\right)z^2 \Rightarrow z^2+y^2=\left(\frac{2+\sqrt{\omega}}{2}\right)z^2$

$\frac{z}{y} = \frac{1+\sqrt{\omega}}{2} \Rightarrow 2z = z + \sqrt{\omega}z \Rightarrow z = \left(\frac{1+\sqrt{\omega}}{2}\right)z$

$\frac{2\sqrt{\omega}-2}{\varepsilon} \times \frac{x\sqrt{\omega}-1}{x\sqrt{\omega}-1} \times \frac{z^2}{y^2} = \frac{2}{1+\sqrt{\omega}} \Rightarrow \frac{z^2}{y^2} = \frac{\sqrt{\omega}-1}{2}$

$\frac{z^2}{y^2} = \frac{1}{\frac{1+\sqrt{\omega}}{2}}$

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$3a + \sqrt{2a^2 + \varepsilon a} = 2 \Rightarrow \sqrt{2a^2 + \varepsilon a} = 2 - 3a \Rightarrow 2a^2 + \varepsilon a = 9a^2 - 6a + 4$

$\Rightarrow 7a^2 - 6a + 4 = 0 \Rightarrow (7a-2)(a-2) = 0 \Rightarrow a = \frac{2}{7} \text{ or } a = 2$

$2-3a \geq 0 \Rightarrow 2 \geq 3a \Rightarrow \frac{2}{3} \geq a$

$\frac{a+1}{a} = \frac{\frac{2}{7}+1}{\frac{2}{7}} = \frac{\frac{9}{7}}{\frac{2}{7}} = \frac{9}{2} = \varepsilon(1\omega)$

۴

$\frac{\sqrt{n+1}}{\sqrt{2-1}+3} - \frac{\sqrt{n+1}}{\sqrt{2-1}+3} = \frac{n-1}{\sqrt{n-1}}$

$\sqrt{n-1}+3 \neq 0 \Rightarrow \sqrt{n-1} \neq -3 \Rightarrow n-1 \neq 9 \Rightarrow n \neq 10$

$\sqrt{n-1} \neq 0 \Rightarrow n \neq 1$

$\Rightarrow D = (1, 10) \cup (10, +\infty)$

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

$\Rightarrow \sqrt{t^2+2} \left(\frac{-2}{9-t^2} \right) = 1 \Rightarrow \sqrt{t^2+2} \left(\frac{-2}{9-t^2} \right) = 1 \Rightarrow \frac{-2\sqrt{t^2+2}}{9-t^2} = 1 \Rightarrow -2\sqrt{t^2+2} = 9-t^2$

$\Rightarrow t^2-9 = 2\sqrt{t^2+2} \Rightarrow t^2-18+9 = 2\sqrt{t^2+2} \Rightarrow t^2-9 = 2\sqrt{t^2+2}$

$\Rightarrow z^2-22z+73=0 \Rightarrow z = \frac{22 \pm \sqrt{(-22)^2-4 \times 73}}{2} \Rightarrow z = \frac{22 \pm 18\sqrt{3}}{2} \Rightarrow z_1 = 11 + 9\sqrt{3}$

$z_2 = 11 - 9\sqrt{3}$

$\frac{z}{t^2} = z-1 \Rightarrow z_1 = 10 + 9\sqrt{3}$

$\lambda = 10 - 9\sqrt{3}$

هر دو ریشه مثبت است

$\oplus$ دورینه

علائم رو صفت آفر نو شتم

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

مخرج را ضرب کنیم به مخرج و بسط دهیم $\Rightarrow 1-x > 0 \Rightarrow x < 1$

$\sqrt{1-x} + 1 \neq 0 \Rightarrow x \neq -1$ $\Rightarrow x < 1, x \neq -1$

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

مخرج را ضرب کنیم به مخرج و بسط دهیم $\Rightarrow -10(1-x) = 1-x^2$

$$\Rightarrow -10 + 10x = 1 - x^2 \Rightarrow x^2 + 10x - 11 = 0 \Rightarrow (x+11)(x-1) = 0$$

$\Rightarrow x = -11$ یا $x = 1$

ب) $\oplus$ $\checkmark$

$$\frac{1}{x^2} + \frac{1}{(1-x)^2} = \frac{14}{9} \Rightarrow \frac{(1-x)^2 + x^2}{x^2(1-x)^2} = \frac{14}{9} \Rightarrow \frac{1-x^2-2x+1}{(x-x^2)^2} = \frac{14}{9}$$

$$\frac{-2x}{(x-x^2)^2} = \frac{14}{9} \Rightarrow \frac{-2x}{x^2(1-x)^2} = \frac{14}{9} \Rightarrow \frac{-2}{x(1-x)^2} = \frac{14}{9}$$

$$14x^2 + 28x - 18 = 0 \Rightarrow (7x+9)(2x-1) = 0 \Rightarrow x = -\frac{9}{7} \text{ یا } x = \frac{1}{2}$$

$\Delta = 1 - \frac{14}{9} = -\frac{5}{9} < 0$

$x_1 = x - \frac{1}{x^2} = \frac{1}{2} \Rightarrow \frac{x^3 - x + 1}{x^2} = 0 \Rightarrow x^3 - x + 1 = 0$

$x_2 = x - \frac{1}{x^2} = -\frac{9}{7} \Rightarrow \frac{x^3 - x + 1}{x^2} = 0 \Rightarrow x^3 - x + 1 = 0$

$$\sqrt{x + \sqrt{-x^3 + 8x^2 + 10x - 100}} + \sqrt{x^2 + \sqrt{-x^3 + 4x - 11}} = \sqrt{x+1} \Rightarrow x+1 > 0 \Rightarrow x > -1$$

$$-x^3 + 8x^2 + 10x - 100 \geq 0$$

$$\Rightarrow (x-4)(x-10)(x+5) \leq 0$$

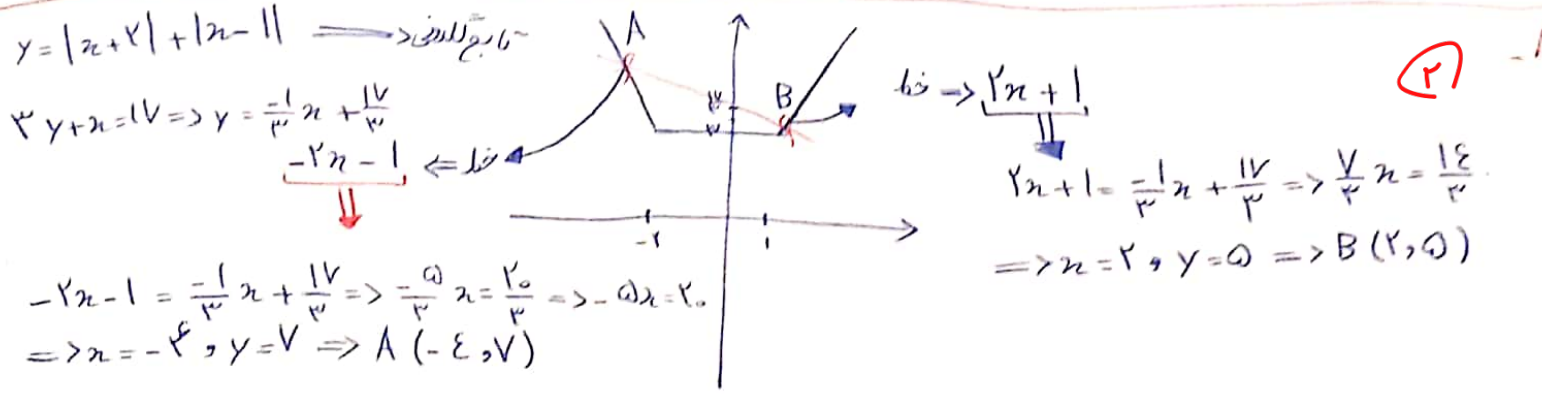
جدول علامت:

$x < -5$	-5	-1	4	10	$x > 10$
+	-	-	-	+	+

$\Rightarrow D = \{x \mid x \in (-5, -1) \cup (4, 10)\}$

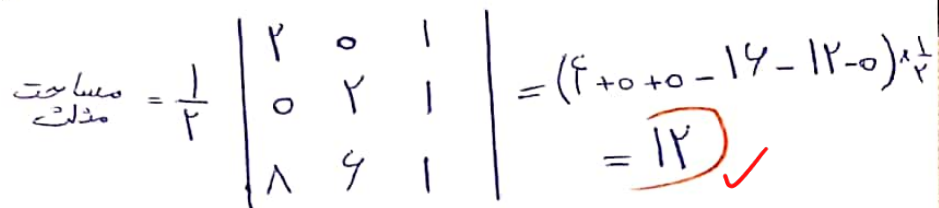
حاصلگیری $\Rightarrow \sqrt{4} + \sqrt{14} = 6 \Rightarrow \checkmark$

یک جواب دارد آن 6 است



فاصله بین دو نقطه $= \sqrt{(1 - (-\frac{17}{5}))^2 + (0 - \frac{17}{5})^2} = \sqrt{4^2 + (-\frac{17}{5})^2} = \sqrt{16 + \frac{289}{25}} = \sqrt{\frac{400 + 289}{25}} = \sqrt{\frac{689}{25}} = \frac{\sqrt{689}}{5}$

① - 9



(P) - 10

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$$u^2 - 24u + 94 = 0 \rightarrow u = 12 \mp 4\sqrt{3} \rightarrow 12, 4\sqrt{3} \text{ قق}$$