

① $\int \frac{z}{y} = \frac{d}{f} \quad \frac{z+t}{y} = \frac{1+\sqrt{\omega}}{r} \quad \frac{\frac{z+t}{y}}{\frac{1}{\omega}} = \frac{(z+t)y}{r}$

② $\Rightarrow \frac{(z+t)y}{2y} = \frac{r}{\omega} \times \frac{1+\sqrt{\omega}}{r} = \frac{1+\sqrt{\omega}}{\omega}$

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

$\frac{z^r}{y^r} = ? \quad \frac{\sqrt{z^r + y^r}}{z} = \frac{1+\sqrt{\omega}}{r} \Rightarrow \frac{z^r + y^r}{z^r} = \frac{r + r\sqrt{\omega}}{r}$

$\Rightarrow 1 + \frac{y^r}{z^r} = \frac{r(1+\sqrt{\omega})}{r} \Rightarrow \frac{y^r}{z^r} = \frac{r+\sqrt{\omega}}{r} - \frac{r}{r} = \frac{1+\sqrt{\omega}}{r} \Rightarrow \frac{z^r}{y^r} = \frac{r}{1+\sqrt{\omega}}$

$ra + \sqrt{ra^r + ra} = r \quad \frac{a+1}{a} = ? \quad \sqrt{ra^r + ra} = r - ra$

$ra^r + ra = r - 1ra^r + 9a^r \Rightarrow 14a^r - 14a + r = 0 \Rightarrow a^r - 14a + 11 = 0 \quad (a-11)(a-1) = 0$

$\begin{cases} a = \frac{11}{r} = 1 \leftarrow \text{حل من المعادلة} \\ a = \frac{r}{11} \leftarrow \text{حل من المعادلة} \end{cases} \quad a = \frac{r}{11} \Rightarrow \frac{\frac{r}{11} + \frac{r}{11}}{\frac{r}{11}} = \frac{2}{1} = \frac{r}{11}$

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

$\Rightarrow \frac{-2\sqrt{2-1}\sqrt{2+1}}{1-2} = \sqrt{2-1} \Rightarrow 2\sqrt{2+1} = 2-1 \Rightarrow r+2 = 2^r - 2 \cdot 2 + 1 \dots$

$\Rightarrow 2^r - 2r + 4 = 0 \quad \Delta > 0 \quad S > 0 \quad P > 0$

$\frac{1}{\sqrt{r-2}+r} - \frac{1}{r-\sqrt{r-2}} = \frac{r-2}{\omega\sqrt{r-2}} \Rightarrow \frac{r-\sqrt{r-2}-r+\sqrt{r-2}}{r^2-(r-2)} = \frac{-r\sqrt{r-2}}{2+r}$

$\Rightarrow \frac{-r\sqrt{r-2}}{2+r} = \frac{\sqrt{r-2}}{\omega} \Rightarrow r+2 = -1 \Rightarrow r = -12$

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

$$\Rightarrow \left(\frac{1}{2(1-2)}\right)^r - r\left(\frac{1}{2(1-2)}\right) = \frac{14}{9} \Rightarrow t^r - r t = \frac{14}{9} \Rightarrow t - r t + 1 = \frac{14}{9}$$

$$(t-1)^r = \frac{14}{9} \Rightarrow \begin{cases} \textcircled{1} t-1 = \frac{14}{9} \Rightarrow t = \frac{14}{9} \\ \textcircled{2} t-1 = -\frac{14}{9} \Rightarrow t = -\frac{1}{9} \end{cases} \quad \textcircled{1} \frac{1}{2(1-2)} = \frac{14}{9} \Rightarrow -2^r + 2 = \frac{14}{9}$$

$$\textcircled{2} \frac{1}{2(1-2)} = -\frac{1}{9} \Rightarrow -2^r + 2 = -\frac{1}{9} \Rightarrow r = 1 \quad r_1 = 1 \quad r_1 + r_2 = 2 \quad \leftarrow$$

$$\sqrt{2 + \sqrt{-2^r + r 2^r + r \omega - 1}} + \sqrt{2^r + \sqrt{-2^r + r 2^r - 1}} = (2+r) \quad (I)$$

$$(I): 2+r \geq 0 \Rightarrow 2 \geq -r \quad (III)$$

$$(II): -2^r + r 2^r - 1 \geq 0 \Rightarrow -(2^r - r 2^r + 1) \geq 0 \Rightarrow (2-r)(2-r) \leq 0 \quad r \leq 2 \leq r$$

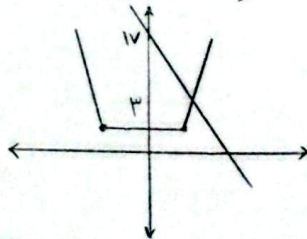
$$(III): -2^r(2-r) + r \omega(2-r) \geq 0 \Rightarrow (2-r)(r \omega - 2^r) \geq 0 \Rightarrow (2-r)(\omega - 2)(\omega + 2) \geq 0$$

$$\Rightarrow 2 \leq -\omega \vee r \leq 2 \leq \omega \quad (I) \cap (II) \cap (III) \quad \boxed{2=r} \quad \text{استنتاج من المعادلات}$$

$$y = |2+r| + |2-1| \quad y + 2 = 14 \Rightarrow y = \frac{-2+14}{9}$$

$$\begin{cases} y = r 2 + 1 \\ y = -r 2 - 1 \end{cases} \quad \begin{cases} r 2 + 1 = \frac{-2+14}{9} \Rightarrow r 2 + r = 14 - 2 \Rightarrow 2 = 1 \quad y = \omega \quad (r, \omega) \textcircled{A} \\ -r 2 - 1 = \frac{-2+14}{9} \Rightarrow -r 2 - r = -2 + 14 \Rightarrow 2 = -1 \quad y = \omega \quad (-1, \omega) \textcircled{B} \end{cases}$$

$$d_{AB} = \sqrt{(1-(-1))^2 + (\omega-\omega)^2} = \sqrt{4} = 2$$



$$y = \frac{1}{r} 2 + r \quad y = \sqrt{2^r - r 2^r + r} \Rightarrow y = \sqrt{(2-r)^2} = |2-r| \quad y_1 = y_2 \Rightarrow |2-r| = \frac{1}{r} 2 + r$$

$$(I): 2 \leq r \Rightarrow 2-r = \frac{1}{r} 2 + r \Rightarrow 2 = 1 \Rightarrow y = \frac{1}{r}(1) + r = 6 \quad (1, 6)$$

$$(II): r < 2 \Rightarrow -(2-r) = \frac{1}{r} 2 + r \Rightarrow -\frac{2}{r} = 0 \Rightarrow 2 = 0 \quad y = 2 \quad (0, 2)$$

$$d = \frac{|1+6-2|}{\sqrt{1+1}} = 4\sqrt{2} \quad S = \frac{1}{r} \times 4\sqrt{2} \times \sqrt{1} = 12$$

مسئله ۱. $\frac{1}{2} + \frac{1}{y} = \frac{1}{10}$

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$\frac{1}{2} + \frac{1}{2+9} = \frac{1}{10} \Rightarrow 2^2 - 112 - 110 = 0 \Rightarrow \Delta = (-112)^2 - 4(1)(-110)$

$\Rightarrow 2 = \frac{112 \pm \sqrt{112^2 + 4 \times 110}}{2} \Rightarrow \begin{cases} 2 = 14 \checkmark \\ 2 = -10 \end{cases}$