

$$1) y = (x - 2[\frac{x}{2}])^2 \rightarrow (x - [\frac{x}{1}])^2 < 2$$

$$\rightarrow (x - 2[\frac{x}{2}])^2 < 2 \rightarrow R_f = [0, 2)$$

$$\therefore \log \frac{y}{10^6} = \sin x \rightarrow \log \frac{y}{10^6} \leq 1$$

$$\rightarrow 10^{-6} \leq y \leq 10^6 \rightarrow R_f = [10^{-6}, 10^6]$$

$$y = \sqrt{\frac{x^2 - 9}{x^2 - 9}} \rightarrow y^2 = \frac{x^2 - 9}{x^2 - 9} \rightarrow x^2 = \frac{y^2 - 9}{y^2 - 1}$$

$$R_f = [0, \frac{2}{3}] \cup (1, +\infty) \rightarrow a = 0, b = \frac{2}{3}, c = 1$$

$$2) y = x + \frac{1}{x} + 2\sqrt{x + \frac{1}{x}} \rightarrow x + \frac{1}{x} = t$$

$$y = t + 2\sqrt{t}$$

$$\rightarrow R_f = [2 + 2\sqrt{2}, +\infty)$$

$$x + \frac{1}{x} \geq 2 \quad \forall$$

$$x + \frac{1}{x} \leq -2 \quad \forall$$

$$\therefore y = -\sin^2 x + 2\sin x + 1$$

$$\max y = 2$$

$$\min y = 0$$

$$\rightarrow R = [0, 2]$$

$$10 \times 9 = 90$$

$$-\frac{1}{3} (1 + 2\sqrt{3} + 9) = -10$$

$$\frac{9}{x} (1 + 2\sqrt{3} + 9) = 90$$

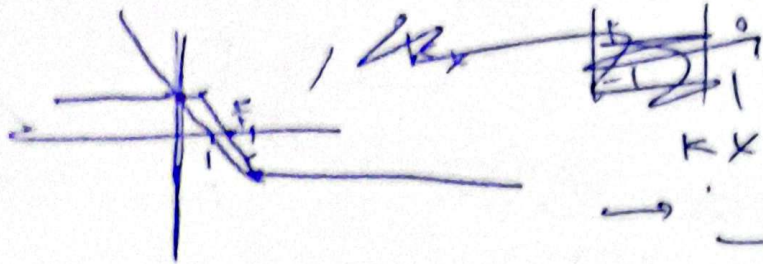
$$\rightarrow 90 - 10 = 80 = \sqrt{3} \rightarrow \text{مجموع الجذور}$$

$$y = \sqrt{ax^2 + bx + c} \rightarrow a = 0 \rightarrow \sqrt{bx + c} = 0 \rightarrow bx + c = 0$$

$$f(x) = 1 \rightarrow \sqrt{bx + c} = 1 \rightarrow bx + c = 1 \rightarrow b = 1 \rightarrow c = -1$$

$$y = \sqrt{x^2 - 1} \rightarrow R = [0, +\infty)$$

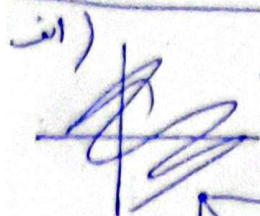
$|x-2| - |x-1| = 1 \iff x \rightarrow \dots$



$K \times$ if $x=2, y=-1$

$\rightarrow K = -1$

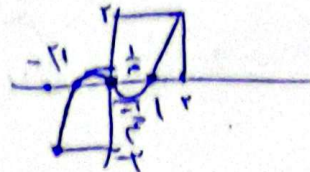
$\rightarrow K = -\frac{1}{2}$



$x \in [-1, 0] \rightarrow y = x + 1$
 $x \in (0, 1) \rightarrow y = 0$
 $x \in [1, 2] \rightarrow y = x - 1$
 $x < -1 \rightarrow y = 0$
 $x > 2 \rightarrow y = 0$

$\frac{1+1}{-2} = -1$

$x \in [-1, 0] \rightarrow y = x + 1$
 $x \in (0, 1) \rightarrow y = 0$
 $x \in [1, 2] \rightarrow y = x - 1$
 $x < -1 \rightarrow y = 0$
 $x > 2 \rightarrow y = 0$



$y = \frac{x^2 + 2}{x^2 + x} \rightarrow \frac{x(x+2)}{x(x+1)} = \frac{x}{x+1} \rightarrow y = \frac{x}{x+1} \rightarrow y \neq 0, y \neq -1$
 $a=0, b=-1 \rightarrow \boxed{a+b=-1}$

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



$\sqrt{x} = \frac{y-3}{y-1}$
 $x = \left(\frac{y-3}{y-1}\right)^2$

$\boxed{-1} \rightarrow \boxed{+}$

$y = \frac{(x+1)(x-1)(x+2)}{(x-1)(x+1)} = y = x+2$
 $x \neq 1, -1$

$\boxed{y \neq 3, 1}$

$\boxed{3+1=4}$