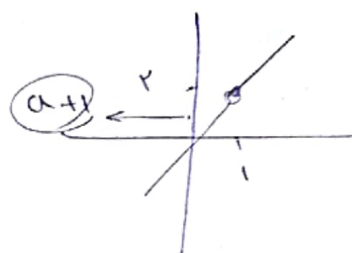


الف) $(m, 2) \rightarrow m=2$
 $(2, 2) \rightarrow (2, n^2-n)$
 $n^2-n=2 \quad n^2-n-x=0$
 $(n+1)(n-2)=0$
 $n=2$

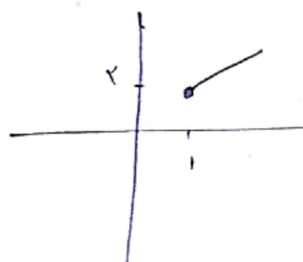
ب) $(m, 2) \rightarrow m=2$
 $(2, 2) \rightarrow (2, n^2-n)$
 $(-1, 1) \rightarrow (a, m^2-1)$
 $(1, 2) \rightarrow (a+2, n)$
 $a=-1$
 $n=2$

$f(x) = \begin{cases} 2x-1 & x \geq 1 \\ x+a & x < 1 \end{cases}$



$a+1, 2$
 $a < 1$

$f(x) = \begin{cases} 2x-1 & x \geq 1 \\ ax+a-1 & x < 1 \end{cases}$
 $y=a-1 \leftarrow x=0$



$a-1 < 2 \rightarrow a < 3$

الف) $y = x^2 + 2$
 $y_1 = y_2 \quad x_1^2 + 2 = x_2^2 + 2$
 $f(x)^{-1} \Rightarrow x = y^2 + 2$
 $y = \sqrt{x-2}$

ب) $y = x^2 - 2x + 2$
 $y = x^2 - 2x + 2 + 2 - 2$
 $(y-2)^2 - 2 = (x-1)^2 - 2$
 $(y-2)^2 = (x-1)^2$
 $x = y-2$

الف) $y = \frac{3x+1}{x-2}$
 $f(x) = \frac{3x+1}{x-2}$

ب) $y = \frac{4+x}{x+2} = \frac{2(2+x)}{x+2}$
 $x = y-2$

و ۱)

$$y = \sqrt{x-1}$$

$$y_1 = y_2 \quad \sqrt{x_1-1} = \sqrt{x_2-1}$$

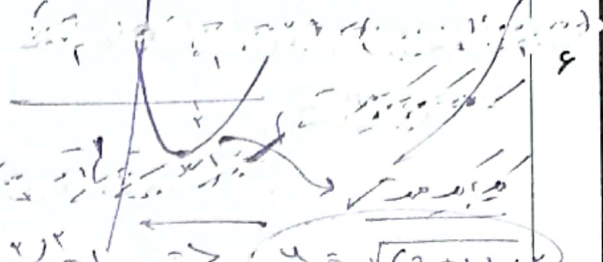
$$x_1-1 = x_2-1$$

$$f(x)^{-1} = x = \sqrt{y-1} \rightarrow x^2 = y-1$$

$$y = x^2 + 1$$

$$y = x^2 + 1$$

$$x \in [1, \infty)$$



$$f(x) = x + \sqrt{x} \rightarrow f(x)^{-1} = y = x + \sqrt{x}$$

$$y = \frac{x}{\sqrt{x^2-1}} \xrightarrow{y_1=y_2} \left(\frac{x_1}{\sqrt{x_1^2-1}} \right)^2 = \left(\frac{x_2}{\sqrt{x_2^2-1}} \right)^2$$

$$\frac{x_1^2}{x_1^2-1} = \frac{x_2^2}{x_2^2-1} \rightarrow x_1^2(x_2^2-1) = x_2^2(x_1^2-1) \rightarrow x_1^2 x_2^2 - x_1^2 = x_2^2 x_1^2 - x_2^2 \rightarrow -x_1^2 = -x_2^2 \rightarrow x_1^2 = x_2^2 \rightarrow x_1 = x_2$$

$$f(x)^{-1} \Rightarrow x = \frac{y^2}{y^2-1} \rightarrow y^2 = \frac{x}{x-1} \rightarrow y = \pm \sqrt{\frac{x}{x-1}}$$

$$g(x) = \sqrt{x} - 1 = -\frac{1}{x} \rightarrow (\sqrt{x} + \frac{1}{x})^2 = x = \frac{1}{x^2}$$

$$g^{-1}\left(\frac{1}{x^2}\right) = \frac{1}{x^2}$$

$$\frac{x^2}{1+x^2} = -\frac{1}{x} \rightarrow -x^3 = 1+x^2 \rightarrow -x^3 = x^2+1 \rightarrow -x^3 = x^2+1$$

$$-\frac{x}{x^2} + \frac{1}{x^2} = -\frac{1}{x} \rightarrow x = -\frac{1}{x} = f\left(-\frac{1}{x}\right)$$

$$f(x)^{-1} \Rightarrow y = \sqrt{x-1} \rightarrow y^2 = x-1 \rightarrow x = y^2+1$$

$$f(x) = x^2+1$$

$$y(x) = x^2+1 + \sqrt{x^2+1} \rightarrow y = x^2+1 + \sqrt{x^2+1} \rightarrow x^2+1 + \sqrt{x^2+1} = 1$$

$$x^2+1 + \sqrt{x^2+1} = 1 \rightarrow x^2 = 0 \rightarrow x = 0 \rightarrow g^{-1}(1) = 0$$