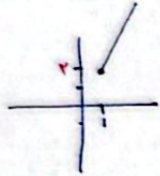


الف) $n^2 - n = 2 \Rightarrow n \in \mathbb{Z}$, $m = 3$

ب) $m = 2 \Rightarrow a = -1 \Rightarrow n = 2$



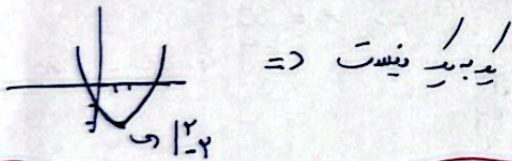
$x = 1 \rightarrow f(x) = 2$

$x + a \leq 2 \Rightarrow a \leq 1$
چون داده x پس استوار نماند

$x = 1 \rightarrow f(x) = 3 - 1 = 2 \Rightarrow ax + a - 1 < 2 \Rightarrow a - 1 < 2 \Rightarrow a < 3$

الف) $y = x^3 + 2$ $\Rightarrow$ یک به یک است $x^3 = y - 2 \Rightarrow x = \sqrt[3]{y - 2}$
 $\Rightarrow f^{-1}(x) = \sqrt[3]{x - 2}$

ب) $y = x^2 - 4x + 2 = x^2 - 4x + 4 - 2 = (x - 2)^2 - 2$



الف) $y = \frac{3x + 1}{x - 2}$ $\Rightarrow$ یک به یک است و هورماریک $x = -\frac{(-2y - 1)}{y - 3} = \frac{2y + 1}{y - 3}$ $f^{-1}(x) = \frac{2x + 1}{x - 3}$

ب) $y = \frac{4 + 2x}{x + 2} = \frac{2(2 + x)}{x + 2} = 2$ $\Rightarrow$ یک به یک نیست $x \neq 2$

الف) $y = \sqrt{x - 3}$ $y^2 = x - 3 \Rightarrow x = y + 3 \rightarrow y = x + 3$ $\Rightarrow$ یک به یک است

ب) $y = x^2 - 4x + 3 = (x - 2)^2 - 1$ $y + 1 = (x - 2)^2 \Rightarrow x - 2 = \pm \sqrt{y + 1} \Rightarrow x = 2 \pm \sqrt{y + 1}$
 $y = 2 \pm \sqrt{x + 1}$
($y \geq -1$) غنق

$$y = x \sqrt{x} \rightarrow y = (\sqrt{x} \cdot \frac{1}{\sqrt{x}})^{\frac{1}{3}} - \frac{1}{\sqrt{x}} \quad (\sqrt{x} \cdot \frac{1}{\sqrt{x}})^{\frac{1}{3}} = y \cdot \frac{1}{\sqrt{x}} \quad \sqrt{x} \cdot \frac{1}{\sqrt{x}} = \frac{1}{\sqrt{x}} \quad \text{GUE} \quad -V$$

$$\sqrt{x} = \frac{1}{\sqrt{x}} + \sqrt{y \cdot \frac{1}{\sqrt{x}}} \rightarrow x = \frac{1}{\sqrt{x}} - \sqrt{y \cdot \frac{1}{\sqrt{x}}} + y \cdot \frac{1}{\sqrt{x}} = y + \frac{1}{\sqrt{x}} - \sqrt{y \cdot \frac{1}{\sqrt{x}}}$$

$$f(x)^{-1} = \frac{1}{\sqrt{x}} - \sqrt{y \cdot \frac{1}{\sqrt{x}}} + x \quad \begin{matrix} a=1 \\ b=\frac{1}{\sqrt{x}} \\ c=\frac{1}{\sqrt{x}} \end{matrix} \left\{ \begin{matrix} a+b+c=1+1+1=1 \end{matrix} \right.$$

$$y = \frac{x}{\sqrt{x^2-1}} \quad y_1 = y_r \Rightarrow \frac{x_1}{\sqrt{x_1^2-1}} = \frac{x_r}{\sqrt{x_r^2-1}} \rightarrow \frac{x_1^2}{x_1^2-1} = \frac{x_r^2}{x_r^2-1} \quad -A$$

$$x_1^2(x_r^2-1) = x_r^2(x_1^2-1)$$

$$x_1^2 x_r^2 - x_1^2 = x_r^2 x_1^2 - x_r^2 \rightarrow x_1^2 = x_r^2 \quad x_1 = \pm x_r$$

$$f(x)^{-1} = y^r = \frac{x^r}{x^2-1}$$

$$x^r = \frac{(-ry^r)}{y^2-1} \Rightarrow x = \frac{|y|\sqrt{r}}{\sqrt{y^2-1}}$$

علامت x و y یکی است <= یکی است

$$F(x)^{-1} = \frac{\sqrt{r}x}{\sqrt{x^2-1}}$$

$$f^{-1}(x) = \frac{x}{1+|x|} \quad y+y|x|=x \xrightarrow{x>0} y+yx=x \Rightarrow y=x(1-y) \Rightarrow x=\frac{y}{1-y} \quad \left\{ \begin{matrix} f(x) = \frac{x}{1-|x|} \end{matrix} \right. \quad -9$$

$$x<0 \rightarrow y-yx=x \Rightarrow x=\frac{y}{1+y}$$

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

$$f\left(-\frac{r}{\delta}\right) + g^{-1}\left(-\frac{r}{\delta}\right) = \frac{-\frac{r}{\delta}}{1-\frac{r}{\delta}} + \left(1-\frac{r}{\delta}\right)^{\frac{1}{2}} = \frac{-r^{\frac{1}{2}}}{\sqrt{\Delta}}$$

$$f^{-1}(x) = \sqrt[3]{x-1} \quad y = \sqrt[3]{x-1} \quad x = \sqrt[3]{y+1} \quad x^3 = y+1 \quad y = x^3-1 \quad f(x)^{-1} = x^3+1 \quad -10$$

$$g(x) = f(x) + \sqrt{f(x)} = x^3+1 + \sqrt{x^3+1} = (\sqrt{x^3+1} + \frac{1}{\sqrt{x^3+1}})^{\frac{1}{3}} - \frac{1}{\sqrt{x^3+1}} \rightarrow \sqrt{y+1} + \frac{1}{\sqrt{y+1}} = \sqrt{x^3+1} + \frac{1}{\sqrt{x^3+1}}$$

$$\sqrt{x^3+1} = \sqrt{y+1} + \frac{1}{\sqrt{y+1}} \quad x^3 = y + \frac{1}{\sqrt{y+1}} - \sqrt{y+1}$$

$$g^{-1}(x) = \sqrt[3]{x + \frac{1}{\sqrt{x}} - \sqrt{x}} \rightarrow g^{-1}(x) = \sqrt[3]{1 + \frac{1}{\sqrt{x}} - \sqrt{x}} = \sqrt[3]{1 + \frac{1}{\sqrt{x}} - \sqrt{x}} = \sqrt[3]{4} = \sqrt[3]{\frac{4}{1}}$$