

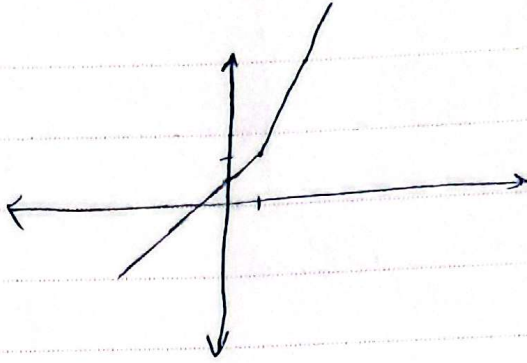
Date:

Sub: $\text{گسٹریٹھ$ - لکھنؤ

الف) $(r, 2), (r, n-n) \rightarrow n-n=2 \rightarrow n=1 \quad (-1, 2)(-1, 2) \text{ جو } -1$
 $\rightarrow n=2 \rightarrow (r, 2)(m, 2) \rightarrow m=2$

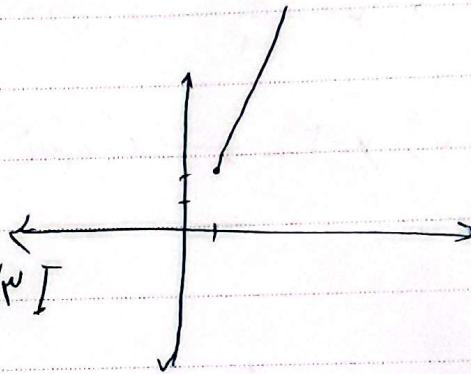
ب) $(m, 3), (2, 3) \rightarrow m=2 \rightarrow (a, 1), (1, 1) \rightarrow a=1 \rightarrow (1, 1)(1, 2) \rightarrow n=2$

$f(n) = \begin{cases} r_{n-1}, & n \geq 1 \\ m+a, & n < 1 \end{cases}$
 $n < 1 \rightarrow m+a \leq r \rightarrow \boxed{a \leq r}$



$f(n) = \begin{cases} r_{n-1}, & n \geq 1 \\ a_{n-1}, & n < 0 \end{cases}$

$n=0 \rightarrow a-1 \leq r \rightarrow a \leq r+1 \Rightarrow \boxed{a \leq r+1}$



$a > 0 \leftarrow \begin{matrix} \text{موجب} \\ \text{موجب} \end{matrix} \quad \text{II}$

$\boxed{0 < a \leq r+1}$

Date:

Sub:

الف) $y = x^3 + 2$

تابع یک به یک است

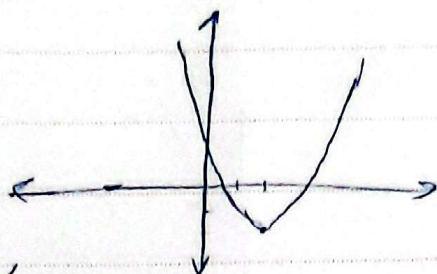
۴

$$x = y^3 + 2$$

$$y = \sqrt[3]{x-2} \Rightarrow f^{-1}(x) = \sqrt[3]{x-2}$$

ب) $y = x^2 - 4x + 2$

$$\frac{f}{f} = 2 \quad 4 - 1 + 2 = 2$$



تابع یک به یک نیست

الف) $y = \frac{x^2 + 1}{x - 2}$ تابع هوردا افیل یک به یک است

۵

$$x = \frac{y^2 + 1}{y - 2} \xrightarrow{\text{تبدیل}} y = \frac{x^2 + 1}{x - 3} \Rightarrow f^{-1}(x) = \frac{x^2 + 1}{x - 3}$$

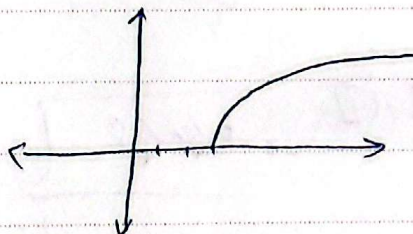
ب) $y = \frac{x^2 + 2x}{x + 2} \Rightarrow y = 2 \rightarrow$ تابع یک به یک نیست

الف) $y = \sqrt{x - 3}$

تابع یک به یک است

۶

$$x = \sqrt{y - 3}$$



$$x^2 + 3 = y \rightarrow f^{-1}(x) = x^2 + 3, \quad x \geq 0$$

ب) $y = x^2 - 4x + 3, \quad x \in [2, +\infty)$

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

حل اول
الف) $\frac{f}{f} = 2 \Rightarrow$ تابع یک به یک است

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

$$R_{f^{-1}} \geq 2 \Leftarrow R_{f(x)} \geq 2$$

Elipon

Date:

Sub:

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

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

$$\rightarrow a=1, b=\frac{1}{y}, c=-\frac{1}{y} \rightarrow 1 + f\left(\frac{1}{y}\right) + f\left(-\frac{1}{y}\right) = \boxed{1}$$

$$f(n_1) = f(n_2) \Rightarrow \frac{n_1}{\sqrt{n_1^2 - y}} = \frac{n_2}{\sqrt{n_2^2 - y}} \rightarrow \frac{n_1^2}{n_1^2 - y} = \frac{n_2^2}{n_2^2 - y} \rightarrow n_1^2 = n_2^2 \rightarrow n_1 = \pm n_2$$

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

$$f\left(-\frac{y}{a}\right) \rightarrow f^{-1}(n) = \frac{n}{1 + |n|} \rightarrow \frac{n}{1 + |n|} = -\frac{y}{a} \rightarrow -y - y|n| = an$$

$$g^{-1}\left(-\frac{y}{a}\right) \rightarrow g(n) = \sqrt{n} - 1 \rightarrow \sqrt{n} - 1 = -\frac{y}{a} \rightarrow n = \frac{9}{16}$$

$$-\frac{y}{a} + \frac{9}{16} = \frac{-a + y\sqrt{a}}{y\sqrt{a}} = \frac{-y\sqrt{a}}{y\sqrt{a}}$$

$$g^{-1}(12) \rightarrow f(n) + \sqrt{f(n)} = 12 \rightarrow f(n) = 9 \rightarrow n^2 + 1 = 9 \rightarrow n = \pm 2$$

$$f^{-1}(n) = \sqrt[n]{n-1} \rightarrow y = \sqrt[n]{n-1} \rightarrow n = \sqrt[y]{y-1} \rightarrow y = n^{\frac{1}{n}} + 1 \rightarrow f(n) = n^{\frac{1}{n}} + 1$$