

$$f = \{(1, 2), (n, a), (2, n^2 - n), (m, 2), (-1, 2)\}$$

$$n^2 - n = 2 \rightarrow n^2 - n - 2 = 0 \rightarrow (n-2)(n+1) \rightarrow \begin{cases} n=2 \text{ صحیح} \\ n=-1 \text{ صحیح} \end{cases} \rightarrow m=2$$

$$b) \{(-1, 1), (1, 2), (2, 2), (a, m-1), (a+2, n), (m, 2)\}$$

$$m=2 \rightarrow m-1 \rightarrow 2-1=1 \quad (a, 1) \rightarrow a=-1$$

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

$$f(n) \begin{cases} 2n-1 \geq 1 \\ a+a \leq 1 \end{cases} \quad \begin{aligned} a=1 &\rightarrow 2 \times 1 - 1 = 1 \\ n+a < 2 &\rightarrow 1+a < 2 \rightarrow a < 1 \end{aligned}$$

$$f(n) \begin{cases} 2n-1 > 1 \\ a+a-1 < 2 \end{cases} \quad \begin{aligned} & \text{کمیته است} \quad 2 \times 1 - 1 = 1 \\ & \text{بیشتر} \end{aligned}$$

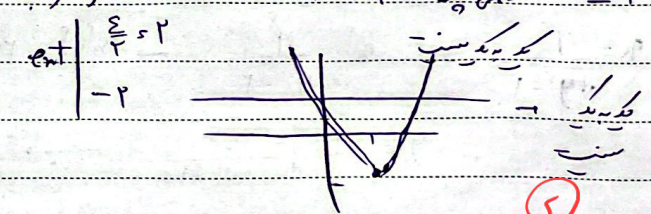
$$\begin{aligned} & \text{چون } 2n-1 > 1 \text{ پس } n > 1 \\ & \text{پس } a+a-1 < 2 \rightarrow a > 0 \end{aligned}$$

$$a < 2 \cap a > 0 \rightarrow a \in (0, 2)$$

$$y = a^2 + 2$$

$$y_1 \neq y_2 \rightarrow a_1^2 + 2 = a_2^2 + 2 \rightarrow a_1^2 = a_2^2 \rightarrow a_1 = a_2$$

$$c) y = a^2 - 2a + 2 \rightarrow \text{معمولی}$$



$$a = y + 2 \rightarrow a - 2 = y \rightarrow y = \sqrt{a-2}$$

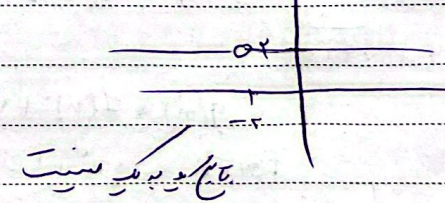
$$a) \frac{2a+1}{a-2} \rightarrow \text{معمولی}$$

$$b) y = \frac{2+2a}{a+2}$$

$$y = \frac{2a+1}{a-2} \rightarrow a = \frac{2y+1}{y-2}$$

$$\frac{2(2+a)}{a+2} = 2 + \frac{2}{a+2} \rightarrow y=2$$

$$y = \frac{2y+1}{y-2} \rightarrow y = \frac{-2a-1}{a-2}$$



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

معمولی

Subject :

Year. Month. Date. ()

1) $y = \sqrt{x-2}$

$x = y^2 + 2$

$x = y^2 + 2 \rightarrow y = \sqrt{x-2}$

$x^2 + 2 \geq 0$

$y = x^2 + 2$
 $x \geq 0$

$|x| \geq 0$

$D_f = R_f = 1$
 $a \geq 2 = R_f - 1$

$x^2 + 2 \geq 2$
 $x^2 \geq 0 \rightarrow x$

$D_{f^{-1}} = R_{f^{-1}}$
 $y \geq 0$

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

ent $\frac{x}{2} \geq 2$

$y = (x-2)^2 - 2$

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

$x = 2 \pm \sqrt{y+2} \rightarrow y = 2 \pm \sqrt{x+1}$

$f^{-1}(x) \geq 2 \rightarrow 2 \pm \sqrt{x+1} > 2$

دو د بړه نه مني - نو د $f^{-1}(x) = 2 + \sqrt{x+1}$

2) $f(x) = ax + b + \sqrt{x-c}$ په $f^{-1}(x) = ax + b - \sqrt{x-c}$ په $(0, +\infty)$ کې $f(x) = ax + b$ (5)

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

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

$y = x + \frac{1}{2} + \frac{1}{2} - \sqrt{x + \frac{1}{2}} \rightarrow x + \frac{1}{4} - \sqrt{x + \frac{1}{2}} \rightarrow c = -\frac{1}{2} \quad b = \frac{1}{4} \quad a = 1$

$1 + 1 - 1 = 1$

$y = \frac{x}{\sqrt{x^2-2}} \rightarrow \frac{x_1}{\sqrt{x_1^2-2}} = \frac{x_2}{\sqrt{x_2^2-2}} \rightarrow \frac{x_1^2}{x_1^2-2} = \frac{x_2^2}{x_2^2-2}$ (4)

$\frac{x_1^2}{x_1^2-2} = \frac{x_2^2}{x_2^2-2} \rightarrow x_1^2 = x_2^2 \rightarrow x_1 = \pm x_2 \rightarrow |x_1| = |x_2|$

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

$y^2(x^2-1) = -2x^2 \rightarrow y^2 = \frac{-2x^2}{x^2-1}$ (5)

$y = \pm \sqrt{\frac{-2x^2}{x^2-1}} \rightarrow$ نو د y د بړه نه مني - نو د $y = + \sqrt{\frac{-2x^2}{x^2-1}}$

$f^{-1}(x) = \frac{x}{1+|x|}$

$g(x) = \sqrt{x} - 1$

$\frac{x}{1+|x|} = \frac{-5}{8} \rightarrow 8x = -5 - 5|x| \rightarrow 8x = -5 + 5|x| \rightarrow 8x = -5 \rightarrow x = -\frac{5}{8}$ (5)

$\sqrt{x} - 1 = \frac{-5}{8} \rightarrow \sqrt{x} = \frac{3}{8} \rightarrow x = \frac{9}{64}$

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

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

$g(x) = f(x) + \sqrt{f(x)}$

$f(x) = x^2 + 1$ (5)

$g^{-1}(x) = ?$

$g(x) = f(x) + \sqrt{f(x)} = 12$

په $g \rightarrow x^2 + 1 = 9 \rightarrow x = \pm 2$

$g(x) = 12$