

(10)

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

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

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

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

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

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

$$f(n) \begin{cases} 2n-1 > 1 \\ a+a-1 < 2 \end{cases} \quad \begin{aligned} &\text{چون } 2n-1 > 1 \text{ پس } n > 1 \\ &\text{پس } a+a-1 < 2 \rightarrow a < 1.5 \end{aligned}$$

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

$$a < 2 \rightarrow a < 2$$

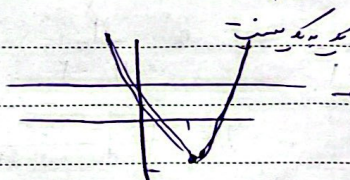
$$y = a^2 + 2$$

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

$$a_1 = a_2 \text{ یا } a_1 = -a_2$$

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

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

$$\Delta = 4 - 4 = 0$$


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

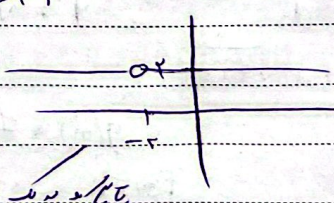
$$b) y = \frac{2+2a}{a+2}$$

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

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

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

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



Subject :

Year. Month. Date. ()

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

$x = y^2 + 2$

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

$x^2 + 2 \geq 0$

$y = x^2 + 2$
 $x > 0$

$|x| > 0$

$D_f = R_f = 1$
 $a > 2 = R_f - 1$

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

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

$y = x^2 - 2x + 2 \quad x \in [1, +\infty)$ (4)

ent $\left| \frac{x}{2} \right|$

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

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

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

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

دو جوابه منبسطه $f^{-1}(x) = 1 + \sqrt{x+1}$

مثال: $a+2b+3c$ چله $f^{-1}(x) = ax+b-\sqrt{x-2}$ چله $(0, +\infty)$ د $f(x) = a\sqrt{x}$ (5)

$y = a + \sqrt{ax} \rightarrow (\sqrt{ax} + \frac{1}{y})^2 = \frac{1}{y^2}$

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

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

$1+1-1=1$

$y = \frac{a}{\sqrt{x^2-2}} \rightarrow \frac{a_1}{\sqrt{x_1^2-2}} = \frac{a_2}{\sqrt{x_2^2-2}} \rightarrow \frac{a_1^2}{x_1^2-2} = \frac{a_2^2}{x_2^2-2}$ (6)

$\frac{a_1^2}{x_1^2-2} = \frac{a_2^2}{x_2^2-2} \rightarrow a_1^2 = a_2^2 \rightarrow a_1 = \pm a_2 \rightarrow |a_1| = |a_2|$

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

$y = \pm \sqrt{\frac{2a^2}{a^2-1}} \rightarrow$ د y دوه جوابه $y = \pm \sqrt{\frac{2a^2}{a^2-1}}$

$f^{-1}(x) = \frac{x}{1+|x|} \quad g(x) = \sqrt{x} - 1$ (7)

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

$\sqrt{x} - 1 = \frac{-5}{8} \rightarrow \sqrt{x} = \frac{3}{8} \rightarrow x = \frac{9}{64}$ $-\frac{5}{8} + \frac{9}{64} = -\frac{25}{64}$

$f^{-1}(x) = \sqrt{x-1} \quad y = \sqrt{x-1} \Rightarrow x = y^2 + 1 \rightarrow x^2 = y^2 + 1 \rightarrow y = x^2 + 1 = y$ (8)

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

$g^{-1}(x) = ? \quad g(x) = f(x) + \sqrt{f(x)} = 12$

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

$g(x) = 12$