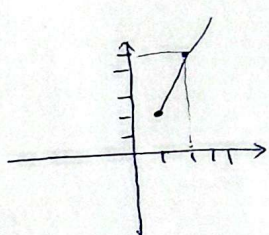


هیچ حلقه دومی یکسان نباشد. اگر یکدیگر در آیه های اول یکسان باشد

الف) $\{(3,2), (n,0), (3, n^2-n), (m,2), (-1,4)\}$
 $(3,2) = (m,2) \Rightarrow m=3$
 $(3,2) = (3, n^2-n) \Rightarrow n^2-n-2=0 \Rightarrow n=2$ یا $n=-1$
 $(-1,4) \neq (-1,0)$

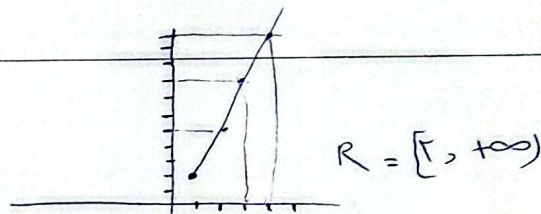
ب) $\{(-1,1), (1,2), (3,3), (a, m-1), (a+2, n), (m,3)\}$
 $(2,3) = (m,3) \Rightarrow m=2$
 $m=2 \Rightarrow m-1=1 \Rightarrow (-1,1) = (a,1) \Rightarrow a=-1$
 $a=-1 \Rightarrow a+2=1 \Rightarrow (1,2) = (1,n) \Rightarrow n=2$



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

n	1	2	3	4	...
y	2	5	8	11	...

x^{n-1}
 $\{x \geq 1\}$



برای یک: $a > 0$
 یک بر دو: $a < 0$
 یک بر دو: $a < 0$
 $y = ax + a - 1$
 $a > 0$
 $a - 1 < 2 \Rightarrow a < 3$
 $0 < a < 3$
 $a = 1, 2$

الف) $y = x^3 + 2$

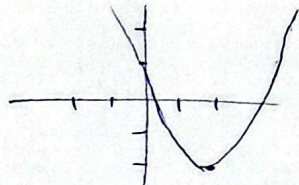
$y = x_1^3 + 2$
 $y = x_2^3 + 2$

$\Rightarrow x_1^3 + 2 = x_2^3 + 2 \Rightarrow x_1 = x_2$

$x = y^3 + 2 \Rightarrow y^3 = x - 2 \Rightarrow y = \sqrt[3]{x-2}$

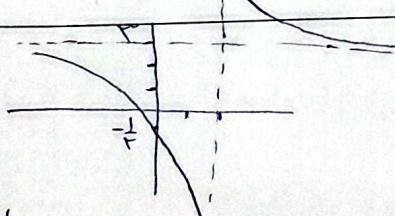
ب) $y = x^2 - 8x + 2$

$\frac{-b}{2a} = 2$
 -2



تابع یک به یک نیست

الف) $y = \frac{3x+1}{x-2}$



مخارج نام: $2 = 2$
 انصاف: $3 = \frac{3}{1} = y = \frac{a}{c}$
 تابع یک به یک است

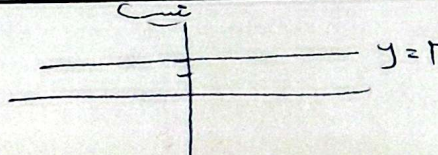
معکوس تابع: $x = \frac{3y+1}{y-2}$

$xy - 2 = 3y + 1 \Rightarrow xy - 2y = 3y + 1 \Rightarrow xy - 5y = 1 \Rightarrow y(x-5) = 1 \Rightarrow y = \frac{1}{x-5}$

ب) $y = \frac{2x+4}{x+2}$

$ad \neq bc$
 $2 \times 2 \neq 4 \times 1$

x	-1	0	1	2
y	2	2	2	2



تابع ثابت $y=2$
 یک به یک نیست
 معکوس نیز هم نیست

الف) $y = \sqrt{x-2}$

$y = \sqrt{x_1-2}$
 $y = \sqrt{x_2-2}$ } $\Rightarrow \sqrt{x_1-2} = \sqrt{x_2-2} \Rightarrow x_1-2 = x_2-2 \Rightarrow x_1 = x_2$
 معکوس $\Rightarrow n = \sqrt{y-2} \Rightarrow n^2 = y-2 \Rightarrow y = n^2+2$ (اسی طرح)

ب) $y = n^2 - (n+2+2+1-1) \Rightarrow y = n^2 - (n+2) \Rightarrow y = (n-1)^2 - 1$
 $\Rightarrow n-2 = \pm \sqrt{y+1} \Rightarrow n = 2 \pm \sqrt{y+1} \Rightarrow f^{-1}(y) = 2 + \sqrt{y+1}$
 یک - یک معکوس داره

$f(n) = n + \sqrt{n}$ $f^{-1}(n) \Rightarrow y + \sqrt{y} = n \Rightarrow y + \sqrt{y} + \frac{1}{4} = n + \frac{1}{4}$

$\Rightarrow n + \frac{1}{4} = (\sqrt{y} + \frac{1}{4})^2 \Rightarrow \sqrt{y} = \pm \sqrt{n + \frac{1}{4}} - \frac{1}{4} \Rightarrow y = (\sqrt{n + \frac{1}{4}} - \frac{1}{4})^2$

$\Rightarrow y = n + \frac{1}{4} - \sqrt{n + \frac{1}{4}} \Rightarrow an + b - \sqrt{n-c}$ $a=1$

$b = \frac{1}{4}$

$c = -\frac{1}{4}$

$a + 2b + c = 1 + 2 \times \frac{1}{4} + (-\frac{1}{4}) = 1$

$y = \frac{n}{\sqrt{n^2-2}}$ $\Rightarrow \frac{n_1^2}{n_1^2-2} = \frac{n_2^2}{n_2^2-2} \Rightarrow n_1^2 n_2^2 - 2n_1^2 = n_2^2 n_1^2 - 2n_2^2$

$\Rightarrow -2n_1^2 = -2n_2^2 \Rightarrow n_1^2 = n_2^2 \Rightarrow n_1 = \pm n_2 \Rightarrow n_1 = n_2$

یک - یک (اسی طرح) y و n تراش المی مختلف علامه داره = با نتیجه ال اشتباه اس

معکوس $y = \frac{n}{\sqrt{n^2-2}} \Rightarrow n = \frac{y}{\sqrt{y^2-2}} \Rightarrow n^2 = \frac{y^2}{y^2-2} \Rightarrow y^2 n^2 - 2n^2 = y^2$

$\Rightarrow y^2 n^2 - y^2 = 2n^2 \Rightarrow y^2 = \frac{2n^2}{n^2-1} \Rightarrow y = \pm \sqrt{\frac{2n^2}{n^2-1}} \Rightarrow y = \frac{\sqrt{2}n}{\sqrt{n^2-1}}$

$y = \frac{n}{1+|n|}$

$y(1+|n|) = n$

$y + y|n| = n \Rightarrow$

$n \geq 0 \quad |n| = n$

$y + yn = n$

$n = \frac{y}{1-y}$

$n < 0 \quad |n| = -n$

$y - yn = n$

$n = \frac{y}{1+y}$

$g^{-1}(n) = ? \quad y = \sqrt{x} - 1$

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

$\Rightarrow y = (n+1)^2 \Rightarrow g^{-1}(n) = (n+1)^2$

$f(-\frac{1}{5}) + g^{-1}(-\frac{1}{5}) = \frac{-\frac{1}{5} \times 10}{\frac{1}{5} \times 10} + \frac{9 \times 1}{\frac{1}{5} \times 1} = \frac{-1}{10} + \frac{9}{1} = \frac{-1+90}{10} = \frac{89}{10}$

$y = \sqrt{x-1}$

معکوس
بکرس

$y^2 = x-1 \Rightarrow y^2+1=x \Rightarrow n^2+1=y \Rightarrow n^2+1=f(n)$

$g(n) = n^2+1 + \sqrt{n^2+1} \Rightarrow g^{-1}(12) = n^2+1 + \sqrt{n^2+1}$

$n=2 \Rightarrow 2^2+1 + \sqrt{2^2+1} = 4+1+1=6$