

$$f(m) = \begin{cases} m-r & ; m > a \\ r-m-r_0 & ; m \leq a \end{cases}$$

$$a^r - r > 12a - r_0 \\ a^r - 12a + 12 > 0 \rightarrow (a-r)^2 (a+r) > 0$$

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مردی ۶ طبقه ششماره ۱۱

$$\frac{-r \pm \sqrt{r^2 - 4(-r_0)(-r)}}{2(-r_0)} = \frac{-r \pm \sqrt{r^2 - 4r_0r}}{-2r_0}$$

دست بنویس!

الدیر صعودی

$a > r$

$a \in (-\infty, -r_0)$

$$f(m) = rm + k, f^{-1}(r) = f \quad y = rm + k \rightarrow y = \frac{n-k}{r} \rightarrow f^{-1}(m) = \frac{a-k}{r}$$

الف) $f(v) = r_v v - 10 = 11$ ✓

$f^{-1}(r) = \frac{r-k}{r} \geq r \rightarrow k \geq -10$ ✓

ب) $f(f(m)) = r(rm - 10) - 10 = 9m - 10$ ✓

$A(r, a), f(m) = \frac{am}{n-1}, a = ?$

$$y = \frac{am}{n-1} \rightarrow \frac{ay}{y-1} \rightarrow ny - n = ay \rightarrow ay - ny = -n \rightarrow y(a-n) = -n$$

$f^{-1}(ra) = \frac{-ra}{a-ra} = \frac{r}{a-r}$ ✓

$y = \frac{-n}{a-n} \rightarrow f^{-1}(m) = \frac{-n}{a-n}$

$\frac{ra}{a} = \frac{r}{1} = a$ ✓

الف) $f \circ f^{-1} = \{(a, a), (v, v), (r, r), (1, 1)\}$ ✓

ب) $f^{-1} \circ f = \{(r, r), (1, 1), (v, v), (a, a)\}$

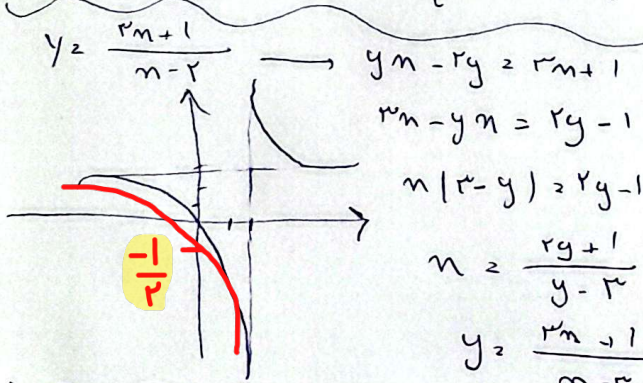
ج) $f \circ g^{-1} = \{(r, 0), (a, 9)\}$ ✓

د) $g^{-1} \circ f = \{(r, 1), (1, 1)\}$ ✓

$\frac{h}{f \circ g^{-1}} = ?$

$g \circ g^{-1} = \{(1, 1), (r, r), (0, 0)\}$

$\{(1, \frac{1}{r}), (r, \frac{1}{r})\}$ ✓

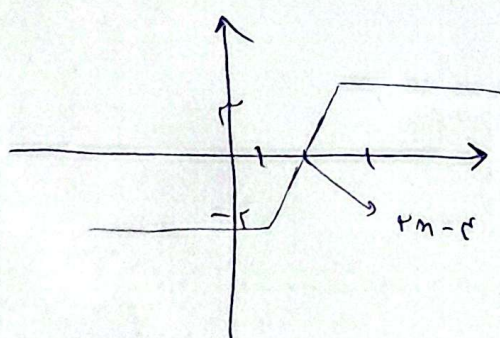


محل برخورد با محورهای مختصات

۵، ۱۵



$f(m) = |m-1| - |m-r|$



$\begin{cases} m < 1 \\ 1 \leq m \leq r \\ m > r \end{cases}$

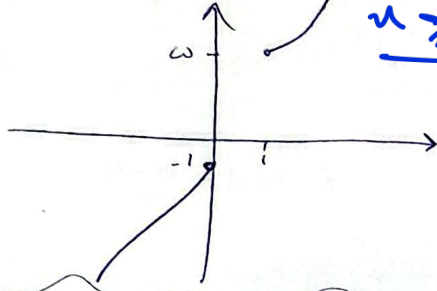
$f(m) = rm - r \rightarrow y = rm - r \rightarrow m = \frac{y+r}{r}$

$ry = m+r \rightarrow y = \frac{m+r}{r} \rightarrow f^{-1}(m) = \frac{m+r}{r}$ ✓

$Df^{-1}: [-r, r]$ ✓

$Rf^{-1}: [1, r]$ ✓

$$f(n) = \begin{cases} n^r + r & ; n \geq 1 \\ n-1 & ; n \leq 0 \end{cases}$$



$$n^r + r = y$$

$$y^r = n - r$$

$$y = \sqrt[r]{n - r}$$

$$f^{-1}(n) = \begin{cases} \sqrt[r]{n-r} & ; n \geq r \\ \frac{n+1}{r} & ; n \leq -1 \end{cases}$$

(1, Δ)

$$n \leq -1 \rightarrow y = \frac{n+1}{r}$$

$$f(n) = n^r - \frac{(n+1)^r}{n+r}$$

$$f^{-1}(n) = \frac{an+b}{rn+d}$$

$$f^{-1}(b) = b, b < 0$$

$$\frac{n^r(n+r) - (n+1)^r}{n+r} = \frac{n^r + rn^r - n^r - 1}{n+r} = \frac{rn^r - 1}{n+r} = f(n)$$

$$y = \frac{-rn-1}{n+r}$$

$$f^{-1}(n) = \frac{-rn-1}{n+r}$$

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

$$\begin{cases} a = -r \\ b = -1 \\ d = r \end{cases}$$

$$f(n) = \frac{n}{n^r+1}$$

$$y = \frac{n}{n^r+1} \rightarrow n = \frac{y}{y^r+1} \rightarrow ny^r + n = y$$

$$ny^r + n - y = 0$$

$$y = \frac{1 \pm \sqrt{1-4n^r}}{2n}$$

$$|n| \leq \frac{1}{r} - \{0\}$$