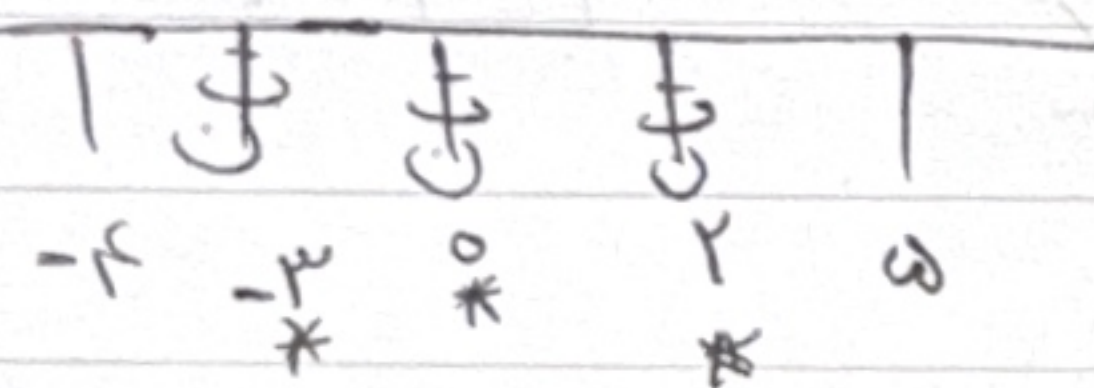


1)  $y \sqrt{nf(m)} \geq 0 \quad m f(m) = 0 \Rightarrow D = [-a, 0] \cup [r, a]$

| $(-a, -a)$ | $n$ | $f(m)$ | $nf(m)$ |
|------------|-----|--------|---------|
|            | -   | +      | -X      |
| $(-a, 0)$  | -   | -      | +V      |
| $(0, r)$   | +   | -      | -X      |
| $(r, a)$   | +   | +      | +V      |

2)  $\sqrt{\frac{-n}{f(m)}} \geq 0 \rightarrow \frac{-n}{f(m)} \geq 0 \rightarrow f(m) \neq 0$

$f(m) < 0 \rightarrow (-r, -r)$   
 $f(m) > 0 \rightarrow (-r, 0)$   
 $f(m) < 0 \rightarrow (0, r)$   
 $f(m) > 0 \rightarrow (r, a)$



$\Rightarrow D = (-r, 0) \cup (0, r) \Rightarrow r \in \mathbb{R}$

3)  $f(r) - r f(r) = r^r - r(r) + r$

$-f(r) \leq r - r + r \Rightarrow -f(r) \leq r \rightarrow f(r) \geq -r \quad n \leq -r \Rightarrow (-r)^r - r(-r) + r \leq$

$f(-r) \leq 1$

$f(r) + r \leq 1$

4)  $f(a) \leq a - \sqrt{a+r} \Rightarrow a - r \leq r$

$\frac{f(f(a)) \leq f(r)}{V} \xrightarrow{r \leq r} f(r) \leq r(r) + r \leq V$   
 $1 \leq r \quad f(1) \leq r(1) + r \leq a$   
 $f(f(1)) \leq f(a) \leq r$

$V + r \leq a$

a)  $f(n-1) = a(n-1)^r - b(n-1) + r$

$a(n^r - rn + 1) - bn + b + r \Rightarrow an^r - ran + a - bn + b + r$

$f(n-1) - f(n) \Rightarrow (an^r - ran + a - bn + b + r) - (an^r - b(n+r)) \leq$

$ran + b + a \Rightarrow$

$ran + a + b \leq rn + r \rightarrow a + b \leq r$

$-ra \leq r$

$-r + b \leq r$

$a \leq r$

$b \leq a$

$a - b \leq r - a$

$a - b \leq -a$

$$4) f^r(x) = [f(x)]^r \Rightarrow f(x) = x^r - r(x) + 1 = 9 - 9 + 1 = 1$$

$$f(-1) = (-1)^r - r(-1) + 1 \Rightarrow 1 + r + 1 = 0$$

$$f(x) = x^r - r(x) + 1 = x - 9 + 1 = -1 \quad f^r(x) = (-1)^r = 1 \quad \frac{f(1) + 0}{1} = \frac{1}{1} = 1$$

$$V) f(x) = r(x) + 1 \Rightarrow x \leftarrow \frac{x}{2} \quad f(-x) \rightarrow -x < x$$

$$f(-x) = (-x)^r = x \rightarrow f(x) = r(x) + 1 = 0 \quad \frac{r(1) - r(x)}{1} = \frac{r(1) - r(x)}{1} = 0$$

$$N) f = \{(x, y), (x, x), (x, 1), (1, y)\}$$

$$\begin{aligned} f(x) = 1 &\Rightarrow y \\ (f(f(x))) & \quad f(x) = 1 \quad f(f(x)) = f(x) = 1 \quad 1 - 1 = 0 \\ f(1) = x &= 1 - x = 0 \quad \frac{0}{x} = 0 \end{aligned}$$

$$9) n \leq \sqrt{x} - x \rightarrow n + x \leq \sqrt{x} \quad n^r + f(n) + a = (n + x)^r + 1 \Rightarrow \left(\frac{x}{\sqrt{x}}\right)^r + 1 = x + 1$$

$$(n^r + f(n) + a) + f \Rightarrow f(n) = \frac{x + f}{x} \quad f(n) (\sqrt{x} - x) = x$$

$$\frac{x^r + f(x) + 9}{x^r + f(x) + a} = \boxed{\frac{11}{14}}$$

$$10) \sqrt{n} \geq 0 \quad n \geq 0 \quad n \neq 0 \quad \boxed{n > 0} \quad (\sqrt{n})^r = n \quad f((n)^r) = f(n)$$

$$f(n) - f(n) = 0 \Rightarrow (n > 0)$$