

① الف) $f(x) = \sqrt{\frac{x-1}{x} - \frac{x}{x-1}} = \sqrt{\frac{x^2-2x+1-x^2}{x(x-1)}} = \sqrt{\frac{-2x+1}{x(x-1)}}$

ب. آفرین

نقطه‌های بحرانی: $x=0$ و $x=1$

علامت‌دهی: $+$ $-$ $+$ $-$

$x = (-\infty, 0) \cup [1, +\infty)$ $x=1$

ب) $f(x) = \frac{1}{x+1} - \frac{2}{x}$

$x \neq 1$
 $x \neq 0$
 $x \neq -2$

$\frac{2}{x-1} + \frac{1}{x+2} \neq 0 \rightarrow \frac{2}{x-1} \neq \frac{-1}{x+2}$
 $2x+4 \neq 1-x$
 $3x \neq -5$
 $x \neq -\frac{5}{3}$

$D = \mathbb{R} - \{0, 1, -2, -\frac{5}{3}\}$

-14

② ا) $\sqrt{\left(\left(\frac{1}{x}\right)^2 - 9\right)(3x-2)}$

$x = -2$ $x = \frac{5}{2}$

$D = \mathbb{R} - (-2, \frac{5}{2})$

ب) $\sqrt[3]{x-1} + \sqrt{y+1} = 3 \rightarrow \sqrt{y+1} = 3 - \sqrt[3]{x-1}$

$0 \leq \sqrt[3]{x-1} \leq 3$
 $1 \leq x-1 \leq 11$
 $2 \leq x \leq 12$

آریتین سیردان/فر

یازدهم پسر

عیب‌ننداره
 سرهم‌ننده بابت بی نظمی در سیرایا جاده و در مسافت = نوشته و نسخ
 بی هم‌هم نبود

③ $f(x) = \frac{\log x}{\sqrt{x-1} + 1}$

$x^2 - x - 2 > 0 \rightarrow x^2 - x - 2 > 0 \rightarrow \frac{-1}{+} \frac{2}{-} \frac{+}{+}$

$\sqrt{x-1} + 1 \rightarrow x-1 \neq -1 \rightarrow x \neq 0$

$x^2 > 1 \rightarrow \begin{cases} x > 1 \\ x < -1 \end{cases}$

$\begin{cases} x < -1 \\ x > 2 \end{cases}$

$D = (-\infty, -1) \cup (2, +\infty)$

(6) $f(n) = \sqrt{m+an-n^2} \xrightarrow[y=c]{n=-1} -1-m+1=1$

$a+b=1$

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

$f(n) = \sqrt{-(n^2 + \frac{1}{2}n - 1)}$

$p = -1 \xrightarrow{\alpha=-1} \beta = b = \frac{3}{2}$

(7) $g(n) = \sqrt{f(n)-n}$

$f(n) = \begin{cases} m-n-1 & n \geq 1 \\ m+n+1 & n < 1 \end{cases}$

$g(n) \begin{cases} n \geq 1 \rightarrow \sqrt{m-n-1-n} = \sqrt{m-2n-1} \rightarrow n \geq 1 \\ n < 1 \rightarrow \sqrt{m+n+1-n} = \sqrt{m+1} \rightarrow n \geq -m \end{cases}$

$-m \leq n < 1$

$D = [-m, +\infty)$

(8) $f(n) = m\sqrt{n-1} = m(n-1)$

$f(\sin \frac{\pi}{2} + \cos \frac{\pi}{2}) = f(\frac{\sqrt{2}}{2} + 1)$

$f(\frac{\sqrt{m+1}}{2}) = (\sqrt{m+1})(\frac{\sqrt{m+1}}{2} - 1)$

$= (\sqrt{m+1})(\frac{\sqrt{m+1}}{2} - 1) = \frac{1}{2}(\sqrt{m+1})(\sqrt{m+1} - 2) = -\frac{1}{2}$

$\textcircled{v} \quad \left. \begin{aligned} f(n) &= \frac{n+1}{n-1} \\ f(f(a)) &= a \end{aligned} \right\} \rightarrow \frac{f(a)+1}{f(a)-1} = a$

$a f(a) - a = f(a)+1$
 $f(a) = \frac{a+1}{a-1}$
 $a \neq 1$

$\textcircled{v} \quad D = \mathbb{R} - \{1\}$

$\textcircled{1} \quad \begin{aligned} f(n) &= n^r \cdot n \\ g(n) &= \sqrt{n-1} \\ f(g(a)) &= -r \end{aligned}$

$\rightarrow g'(n) - r g(a) = -r$
 $g(a) = r$
 $g(a) = r$
 $\rightarrow \sqrt{a^r - 1} = r \rightarrow a = \pm \sqrt[r]{r^2 + 1}$

$\textcircled{9} \quad f(n+r) = n^r - \Delta n + r$

$f(r) \times f(-r) = r \times (-r) = -r^2$

$n=1 \downarrow \quad \downarrow n=-r$
 $1 - \Delta r = \textcircled{v} \quad r^r + r^r + r = \textcircled{v}$

$$\textcircled{10} \quad f(\sqrt{5}\cos n + \sin n) = \tan n$$

$$\hookrightarrow \sqrt{5}\cos n + \sin n - \tan n = 0$$

$$\rightarrow \cos n = \frac{-2 \pm \sqrt{2^2 + 14 + 1}}{1} = \frac{-2 \pm \sqrt{17}}{1}$$

$$\rightarrow \cos n = \frac{-2 + 1}{1} = \frac{-1}{1} = -1 \rightarrow \tan n = \textcircled{\infty}$$

$$\rightarrow \frac{-2 - 1}{1} = \frac{-3}{1} = -3 \rightarrow \tan n = \frac{1}{-3} = -\frac{1}{3}$$

$$\tan n = \frac{1}{\cos n} - 1$$