

تکلیف مشق ۵ : د

حل مسئله

لغات و مسائل

الف) $f(x) = \sqrt{\frac{x-1}{x} - \frac{x}{x-1}}$ $\frac{x-1}{x} \geq \frac{x}{x-1}$ - ۱

$x^2 + 1 - 2x \geq x^2 \rightarrow 2x - 1 \leq 0 \rightarrow 2x \leq 1 \rightarrow x \leq \frac{1}{2}$
 $D_f = (-\infty, \frac{1}{2}]$

ب) $\frac{\frac{1}{x+1} - \frac{2}{x}}{\frac{2}{x-1} + \frac{1}{x+2}}$ ① $x+1 \neq 0$ ② $x \neq 0$ ③ $x \neq 1$ ④ $x \neq -2$
 $x \neq -1$

$D_f = \mathbb{R} \setminus \{-2, -1, 0, 1\}$

الف) $f(x) = \sqrt{\left(\left(\frac{1}{x}\right)^2 - 9\right)\left(x^4 - x^2 x\right)}$ $x = -2$ $x = \frac{4}{3}$ - ۲

$\frac{-2}{+} \mid - \mid \frac{4}{3} \mid +$ $D_f = \mathbb{R} \setminus (-2, \frac{4}{3})$

ب) $\sqrt{x-1} + \sqrt{y+1} = 3$ $x \geq 1$ $D_f = [1, +\infty)$

~~الف)~~ $f(x) = \frac{10^{x^2-x-2}}{\sqrt{x^2-1} + 1}$ $x^2 - x - 2 \geq 0$ - ۳
 $x \geq 2$ $x \leq -1$ $(x-2)(x+1) \geq 0$

$x^2 - 1 \geq 0$
 $x^2 \geq 1 \rightarrow x \geq 1$
 $x \leq -1$

$\frac{-1}{+} \mid - \mid \frac{2}{+}$
 $\frac{-1}{-} \mid \frac{2}{+}$

$D_f = (2, +\infty)$ sam

$$f(x) = \sqrt{r+ax} \cdot x^r \quad [-r, b] \quad a+b=?$$

$$r - ra - r = 0$$

$$-1 = ra$$

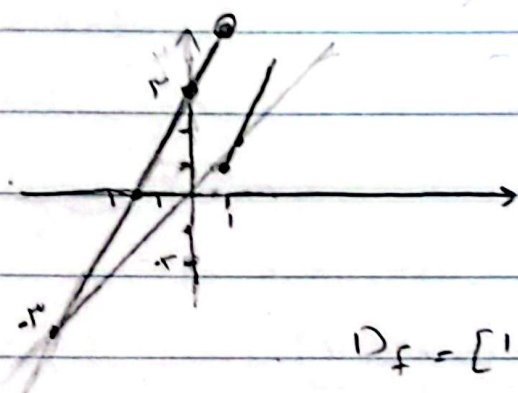
$$-\frac{1}{r} = a$$

$$-x^r - \frac{1}{r}x + r$$

$$-(x^r + \frac{1}{r}x - r) \quad x^r - sx + p$$

$$S = -r + b = \frac{r}{r} \rightarrow b = \frac{r}{r} \quad a+b = -\frac{1}{r} + \frac{r}{r} = \boxed{1}$$

$$f(x) > x$$



$$rx + r = x$$

$$x = -r$$

$$rx - r = x$$

$$rx = r \rightarrow x = 1$$

$$D_f = [1, +\infty)$$

$$f(x) = rx^r - fx \quad f\left(\frac{\sin \frac{\pi}{r}}{r} + \frac{\cos \frac{\pi}{r}}{1}\right) = f\left(\frac{r+1}{r}\right)$$

$$= rx(x-r)$$

$$= (r+1)(r-1) = r-1 = \boxed{-1}$$

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

$$f(f(a)) = a$$

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

$$\frac{\frac{a+1}{a-1} + \frac{a-1}{a-1}}{\frac{a+1}{a-1} - \frac{a-1}{a-1}} = \frac{\frac{r}{a-1}}{\frac{r}{a-1}} = a$$

$$\frac{a+1}{a-1} - \frac{a-1}{a-1} = \frac{r}{a-1}$$

بالنسبة لـ a متغير

$$f(x) = x^r - fx$$

$$g(x) = \sqrt{x^r - 1}$$

$$f(g(a)) = -f$$

$$x^r - fx = -f$$

$$\sqrt{x^r - 1} = r$$

$$x^r - fx - f = 0$$

$$x^r \cdot 1 = r$$

$$x^r = r \rightarrow x = \pm \sqrt[r]{r} \rightarrow a = \pm \sqrt[r]{r}$$

$$(x-r)^r = 0 \rightarrow x=r \rightarrow g(a) = r$$

$$f(x+r) = x^r - ax + b \quad f(e) \times f(-r) = ? = \underline{1 \times 1} \quad -9$$

$$\left. \begin{array}{l} x+r=1 \\ x=1 \end{array} \right\} f(e) = 1 - a + b = \underline{1} \quad \left. \begin{array}{l} x+r=-r \\ x=-4 \end{array} \right\} f(-r) = r^r + r_0 + b$$

$$f(-r) = \underline{1 \times 1}$$

$$P(f \cos^r x + A \cos x) = \tan^r x \quad f(r, A) = ? \quad -10$$

$$\tan^r x = 1 = \frac{1}{\cos^r x}$$

$$f \cos^r x + A \cos x = r, A$$

$$f \cos^r x + A \cos x - r, A = 0$$

$$\cos^r x + A \cos x - 1f = 0$$

$$\underbrace{(\cos^r x - r)}_{\frac{r}{f} = \frac{1}{f}} \underbrace{(\cos x + A)}_{\frac{A}{f}} = 0$$

$$\tan^r x = \frac{1}{\frac{1}{f}} = 1 \quad -1 \quad \text{✓}$$

$$\tan^r x = \frac{1}{\frac{1}{f}} = 1 \quad -1 \quad \text{✓}$$