

بازدهم دهم

تکلیف شماره 4

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۱- $f(x) = (x+1)(x) = x^2 + x$

$f(x^2 + x) = x^2a - x + a \rightarrow 1x^2a + 1x^2 - x - a$

$f(-x) = x^2a - x$

$10a_2 - 1A \Rightarrow a_2 = -1, A$

$x = \sqrt{x-\sqrt{x}} + \frac{1}{\sqrt{x-\sqrt{x}}} + x + \sqrt{x+\sqrt{x}} + \frac{1}{\sqrt{x+\sqrt{x}}} + x \rightsquigarrow x\sqrt{x+\sqrt{x}} + x\sqrt{x-\sqrt{x}} + x$

$\sqrt{x+\sqrt{x}} = \sqrt{x} \cdot \sqrt{1+\frac{1}{\sqrt{x}}} \leftarrow \sqrt{x-\sqrt{x}} = \sqrt{x} \cdot \sqrt{1-\frac{1}{\sqrt{x}}} \leftarrow x(\sqrt{x+\sqrt{x}} + \sqrt{x-\sqrt{x}}) + x = x\sqrt{4} + x$

$x\sqrt{x+\sqrt{x}} + x\sqrt{x-\sqrt{x}} \xrightarrow{\frac{1}{\sqrt{x}}}$ $x + \sqrt{x} + x - \sqrt{x} + x(\sqrt{x+\sqrt{x}} + \sqrt{x-\sqrt{x}}) = 4 \xrightarrow{\sqrt{x}} \sqrt{4}$

۲- $(xf(x) - xf(-x) = x^2 - x) \times x \rightarrow xf(x) - xf(-x) = x^2 - x$

$(xf(-x) - xf(x) = x^2 + x) \times x \rightarrow xf(-x) - xf(x) = x^2 + x$

$-xf(x) = x^2 + x \rightarrow f(x) = \frac{-(x^2 + x)}{x} = -x - 1$

۳- $x=0 \rightarrow (xf(0) = xm-1) \times x \rightarrow xf(0) = 9m-1$

$9m-1 = 9m+10$

$x=-1 \rightarrow xf(0) = 9m+10$

$fm = 1A \rightarrow m = \frac{1A}{9} = \frac{9}{9}$

$xf(0) = m(\frac{9}{9}) - 1 = \frac{9m-9}{9} = \frac{9-9}{9} = 0$

۴- $ax+b+\frac{a}{x}+b = \frac{rx^2-1rx+r}{x} \Rightarrow \begin{cases} a=r \\ b=-1 \rightarrow b=-4 \end{cases} \Rightarrow f(x) = rx-4$

$\hookrightarrow rx-1r+\frac{r}{x}$

$f(-1) = -r-4 = -9 \Rightarrow r=5$

۵- $f(x) = (x-1)\sqrt{1-x}$, $g(x) = -\sqrt{1-x}$ $\rightarrow (1-x)\sqrt{1-x} = -\sqrt{1-x}$

$\hookrightarrow Df = (-\infty, 0]$

$\hookrightarrow Dg = (-\infty, 0]$

$\langle f(x) = g(x) \rangle$

V- $f(x) = x\sqrt{x}$, $g(x) = \sqrt{x^3} = x\sqrt{x}$

$\hookrightarrow Df = [0, +\infty)$ $\hookrightarrow [0, +\infty)$ $\ll f(x) = g(x) \gg$ P

1- $f(x) = [\sqrt{x} - \lfloor \sqrt{x} \rfloor] = 0 \rightsquigarrow Df = [0, +\infty)$ P

$g(x) = \sqrt{x-1}$ $\overset{+ \checkmark}{\underset{0 \checkmark}{x}}$ $Dg = [0, +\infty)$ $\ll f(x) = g(x) \gg$ P
 $\hookrightarrow = 0$

9- $\nearrow (1, \mu)$ $\nearrow (r, \omega =)$
 $\omega) \left(\frac{f+g}{f-g} \right) (1) \rightarrow \frac{r+1}{r-1} = \mu$ / $\omega) \left(\frac{f+g}{f-g} \right) (r) \rightarrow \frac{r+\mu}{r-\mu} = \frac{\mu}{0}$ P

2- $f(1) g(-1) = -1 \cdot 1 = -1$ P

10- $\omega) g(x) = f(\mu x - 1) \rightsquigarrow \mu x - 1 = r \rightarrow x = \frac{r+1}{\mu}$ / $f(x) = \left\{ (r, 1) \left(-1, \frac{r+1}{\mu} \right) (0, \omega) (-r, r) \left(\frac{r-1}{\mu}, -1 \right) \right\}$
 $\hookrightarrow \left\{ (1, 1) (0, \mu) \left(\frac{1}{\mu}, \omega \right) \left(\frac{-1}{\mu}, r \right) \left(\frac{r}{\mu}, -1 \right) \right\}$ P

$\omega) h(x) = f(x) \rightarrow h(x) = \left\{ (r, 1) (0, \omega) (r, -1) (-r, -1) (-\omega, -1) \right\}$ P