

نام و نام خانوادگی شماره کلاس (۱۳۰۰) (۱۳۰۰) پاسنامه تشریحی تکلیف شماره

$$f(x) - x + 1 \geq 0 \rightarrow x \leq f(x) + 1$$

$$f(x) = \begin{cases} 2x-1 & x \geq 5 \\ 2x+1 & x < 5 \end{cases} \rightarrow \begin{cases} x \leq 2x-1+1 \rightarrow x \leq 2x \rightarrow x \geq 0 \\ x \leq 2x+1+1 \rightarrow x \leq 2x+2 \rightarrow x \geq -2 \end{cases} \rightarrow \text{اشتراک: } x \geq 0 \quad (1)$$

$$\rightarrow \text{اشتراک: } -\frac{2}{2} \leq x < 5 \quad (2)$$

$$D = (1) \cap (2) : \quad \Rightarrow D = [-\frac{2}{2}, +\infty)$$

$$y = \frac{2x^2 + 2x + 1}{(x^2 + x + 1)^2} = \frac{2(1x^2 + 1x + 1)}{(x^2 + x + 1)^2} = \frac{2(x+1)^2}{(x+1)^2} = \frac{2}{x+1}$$

$$\rightarrow x+1 \neq 0 \quad x \neq -\frac{1}{2} \rightarrow D_f = \mathbb{R} - \left\{-\frac{1}{2}\right\}$$

$$f(x) = \begin{cases} \frac{x(x^2-1) + 2(x^2-1)}{x^2-1} = \frac{(x^2-1)(x+2)}{(x^2-1)} & x \neq \pm 1 \rightarrow x+2 \\ \frac{ax+b}{x+2} & x = \pm 1 \end{cases}$$

$$\begin{aligned} f(1) = x+2 = 3 &= \frac{a+2}{1+2} \rightarrow 3 \cdot 3 = a+2 \rightarrow a = 7 \\ f(-1) = x+2 = 1 &= \frac{a-2}{-1+2} \Rightarrow b-1 = 2-a \rightarrow a = 3-b \\ \Rightarrow 3-b = 7 \Rightarrow b = -4 \end{aligned}$$

$$\Rightarrow b+c = -4 + \frac{1}{2} = -\frac{7}{2}$$

$$g(x) = \frac{(x-1)(x+1)}{h(x) \cdot Q(x)} = f(x) = \frac{x+1}{x-c} \rightarrow \text{پس باید حاصل (x-1) در صورت باشد تا با صورت ساده شود.}$$

$$\rightarrow h(x) = x-1, \quad Q(x) = x-c$$

$$\rightarrow D_g = D_f \rightarrow D_g = \mathbb{R} - \{1, c\}, \quad D_f = \{c\} \Rightarrow c \neq 1$$

$$\rightarrow x^2 + ax + b = (x-1)^2 = x^2 - 2x + 1 \rightarrow a = -2, \quad b = 1$$

$$\rightarrow a+b+c = -2+1+1 = 0$$

$$g(x) = (x+(-2))^2 (x+1-1) + (1-x-2)^2 (1-x-1)$$

$$= (x-2)^2 (x) + (-x-2)^2 (-x) = (x-2)^2 (x) + (x+2)^2 (-x)$$

$$\rightarrow (x^2 - 4x + 4)(x) + (x^2 + 4x + 4)(-x) = x^3 - 4x^2 + 4x - x^3 - 4x^2 - 4x = -8x^2 = g(x)$$

$1 - rx = r \rightarrow rx = -r \rightarrow x = -1 \rightarrow x < 0 \Rightarrow f(r) = \sqrt[3]{-1} + r = 1$ $1 - rx = -1 \rightarrow rx = 2 \rightarrow x = 1 \rightarrow x > 0 \rightarrow f(-1) = r\sqrt{1} = r$ $\rightarrow f(-1) + f(r) = 1 + r = \underline{a}$	(2) 6
$y = x + \sqrt{x} \rightarrow x + \sqrt{x} - y = (\sqrt{x} + r)(\sqrt{x} - r) = 0 \rightarrow \sqrt{x} = -r \rightarrow \emptyset$ $\sqrt{x} = r \rightarrow \emptyset$ $\rightarrow \sqrt{x} = r \Rightarrow x = r \rightarrow f(y) = (r)^r + r(r) = r^2 y + r^2 = \underline{r^2 y + r^2}$	(2) 7
$f(x-1) + f(1-x) = (x-1)^r + (x-1) + (1-x)^r + (1-x) = (x-1)^r + (x-1) - (x-1)^r - (x-1) = 0$	(2) 8
$D_g: b - rx \geq 0 \rightarrow x \leq \frac{b}{r}, \quad D_f: rx - ra \geq 0 \rightarrow x \geq \frac{ra}{r}$ $\rightarrow D_g \cap D_f = I \rightarrow \frac{b}{r} = 1 \rightarrow b = r, \quad \frac{ra}{r} = 1 \rightarrow a = \frac{r}{r}$ $rf(1) - g(1) = r\sqrt{r(1)} - r + \sqrt{r - r(1)} - r = -r - r = -2r \rightarrow rk = -2r \rightarrow k = -1$ $\rightarrow \frac{ra}{r} - \frac{b}{r} - k = r - r + 1 = \underline{1}$	(2) 9
$D_g: x \geq -1, \quad D_f: m - x \geq 0 \rightarrow x \leq m \quad D_{f \circ g} = D_f \cap D_g = [-1, m] = [-1, v]$ $\Rightarrow m = v$ $\rightarrow f(x) = \sqrt{v-x} + x \quad g(x) = \sqrt{v-x} + r \rightarrow f(r) - g(r) = r + r - r\sqrt{r} = 4\sqrt{r}$ $\rightarrow r + u = 1\sqrt{r} \rightarrow u = 1\sqrt{r} - r$ $\rightarrow m + u = 1\sqrt{r} - r + v = \underline{1\sqrt{r} + a}$	(2) 10