

Subject:

Year: Month: Day: ()

Page: ()

19, 75 أفندي!

الحل النهائي

$$f(x) = \begin{cases} rx-1 & [x] > \varepsilon \quad x \geq 0 \\ rx+r & [x] \leq \varepsilon \quad x < \Delta \end{cases}$$

$$y = \begin{cases} \sqrt{(rx-1)-x+1} & x \geq \Delta \\ \sqrt{(rx+r)-x+1} & x < \Delta \end{cases}$$

(2)

$$\Rightarrow y = \sqrt{x} \quad \begin{matrix} x \geq 0 \\ x \geq \Delta \end{matrix} \rightarrow x \geq \Delta \quad I$$

$$I \cup II = [-\frac{r}{r}, +\infty)$$

$$5 \quad \begin{matrix} \sqrt{rx+r} & x < \Delta \\ x \geq -\frac{r}{r} \end{matrix} \rightarrow -\frac{r}{r} \leq x < \Delta \quad II$$

$$y = \frac{r(\Delta x^r + 1rx^r + rx+1)}{((rx+1)^r)^r} = \frac{r(rx+1)^r}{(rx+1)^r} = \frac{r}{rx+1}$$

(2)

$$rx+1 \neq 0 \Rightarrow x \neq -\frac{1}{r} \Rightarrow D_f = \mathbb{R} - \left\{ -\frac{1}{r} \right\}$$

10

$$y(x) = \frac{x^r-1}{x^r(ax+b)}$$

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

$$\left. \begin{matrix} f(x) = g(x) \rightarrow x^r+ax+b = x^r-(c+1)x+c \\ \Rightarrow a=c-1 \\ b=c \end{matrix} \right\}$$

(2)

$$15 \quad f(x) = g(x) \Rightarrow D_f = D_g \Rightarrow D_f = \mathbb{R} - c \Rightarrow g(x) = \frac{x^r-1}{(x-c)^r}$$

$$x^r-rcx+c = x^r+ax+b \Rightarrow a=-rc, b=c$$

$$-c-1 = -rc \Rightarrow c=1 \Rightarrow b=1, a=-r \quad a+b+c=0$$

$$20 \quad f(x) = \frac{x^r+rx^r-x-r}{x^r-1} = \frac{(x^r-1)(x+r)}{x^r-1} \xrightarrow{x \neq \pm 1} x+r$$

(2)

$$\frac{ax+r}{x+b}$$

$$\left. \begin{matrix} x+c = x+r \Rightarrow c=r \\ x=1 \rightarrow 1+r = \frac{a+r}{b+1} \Rightarrow rb-a=-1 \\ x=-1 \rightarrow -1+r = \frac{-a+r}{b-1} \Rightarrow a+b=r \end{matrix} \right\} \begin{matrix} b = \frac{1}{r} \\ a = \frac{0}{r} \end{matrix}$$

25

$$b+c = \frac{0}{r}$$

30

Subject:

Year: Month: Day: ()

Page: ()

$$\left. \begin{aligned} f(x+1) &= (x+1)^r(x) = x^r(x+1) + x^r x \\ f(1-x) &= (-x-r)^r(-x) = -x^r(-x-r) - x^r x \end{aligned} \right\} \text{دقت!} \quad \text{1.18} - 8$$

$$f(1-x) = \begin{cases} \sqrt{x} + r & x \leq 0 \\ r\sqrt{x} & x > 0 \end{cases} \quad \begin{aligned} x=1 &\Rightarrow f(-1) = r \\ x=-1 &\Rightarrow f(r) = -1+r=1 \end{aligned} \rightarrow f(-1) + f(r) = 2 \quad \text{2} - 9$$

$$f(x+\sqrt{x}) = x^r + r\sqrt{x} \Rightarrow x=4 \rightarrow f(4) = r\sqrt{4} + 1r = r\sqrt{4} \quad - 7$$

$$f(x-1) = (x-1)^r + (x-1) \quad \text{3} - 8$$

$$f(1-x) = (1-x)^r + (1-x) = -((x-1)^r + (x-1)) = -f(x-1)$$

$$10 \quad f(x-1) + f(1-x) = 0 \quad \checkmark$$

$$\begin{aligned} rf - g &= \{(1, k)\} \rightarrow Df \cap g = 1 & Df = x \geq \frac{r}{r} a \Rightarrow Df = [\frac{r}{r} a, +\infty) \\ Dg &= x \leq \frac{b}{r} \Rightarrow Dg = (-\infty, \frac{b}{r}] \end{aligned} \quad \text{9} \quad \text{r}$$

$$\frac{r}{r} a = \frac{b}{r} = 1 \Rightarrow \begin{aligned} b &= r \\ a &= \frac{r}{r} \end{aligned}$$

$$15 \quad \left. \begin{aligned} f(1) &= k-1 \\ g(1) &= rk \end{aligned} \right\} rf(1) - g(1) = rk - r - rk = -k - r$$

$$-k - r = k \Rightarrow rk = -r \quad \begin{aligned} ka - \frac{b}{r} - k &= r\sqrt{\frac{r}{r}} - r + 1 \leq r \\ k &= -1 \end{aligned}$$

$$Df \cap g = Df \cap g = [-1, v] \quad - 10$$

$$20 \quad \left. \begin{aligned} Df &= \begin{cases} m-x \geq 0 \\ x \leq m \end{cases} \rightarrow (-\infty, m] \\ Dg &= \begin{cases} rx+r \geq 0 \\ x \geq -1 \end{cases} \rightarrow Dg = [-1, +\infty) \end{aligned} \right\} \begin{aligned} [-1, m] &= [-1, v] \\ m &= v \end{aligned} \quad \text{r}$$

$$25 \quad \left. \begin{aligned} f(x) &= \sqrt{v-x} + n \\ f-g(r) &= f(r) - g(r) = \sqrt{v-r} \\ g(r) &= \sqrt{n} = r\sqrt{r} \\ \Rightarrow f(r) &= \sqrt{r} + n = n\sqrt{r} \end{aligned} \right\} n = \sqrt{v-r} - r$$

$$n+m = \sqrt{v-r} + 2 \quad \checkmark$$

30