

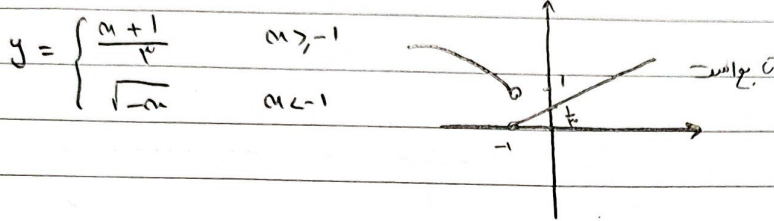
تاريخ

الصفحة

المادة

$$n = \begin{cases} 1^y - 1 \\ -y^r \end{cases} \quad \begin{aligned} y > 1 &\rightarrow 1^y > 1 \rightarrow 1^y - 1 > 0 \Rightarrow n > -1 \\ y < 1 &\rightarrow y^r > 1 \rightarrow -y^r < -1 \Rightarrow n < -1 \end{aligned}$$

(1)



$$g(n) = \sqrt{\frac{n f(n-r)}{f(n)}} \quad \begin{aligned} &\text{for } n > -1, \text{ we have } f(n) = n^r - \epsilon n \\ &\text{for } n < -1, \text{ we have } f(n) = -n^r - \epsilon n \end{aligned}$$

(2)

	-r	-r	0	r	n	r
$f(n-r)$	-	-	0	+	+	+
$f(n)$	-	0	+	+	+	+
n	-	-	-	0	+	+
ϕ	-	+	0	-	+	+

$$D = (-\infty, -r] \cup [0, r) \cup [r, +\infty)$$

$$f(n) = \frac{r n^r - r n + r}{n^r - \epsilon n}$$

$$\text{ii) } f(n) \text{ is? } n^r - \epsilon n \neq 0 \Rightarrow n(n-r)(n+r) \neq 0 \quad (3)$$

$$D_f = \mathbb{R} - \{-r, 0, r\}$$

$$\text{b) } \sqrt{f(n)} \Rightarrow \frac{r n^r - r n + r}{n^r - \epsilon n} \geq 0 \quad \begin{aligned} &\Delta = 9 - 4(r)(r) = -7 \\ &\Delta < 0 \end{aligned}$$

$$\frac{-r - \sqrt{\Delta}}{-2} < \frac{-r + \sqrt{\Delta}}{-2} \Rightarrow D = (-\infty, -r) \cup (r, +\infty)$$

$$\text{ii) } y = \sqrt{\frac{n-r}{n^r - \epsilon n - 1}} \quad \begin{aligned} &\text{for } n > -1, \text{ we have } n^r - \epsilon n - 1 = 0 \\ &\text{for } n < -1, \text{ we have } -n^r - \epsilon n - 1 = 0 \end{aligned}$$

$$\Rightarrow y = \frac{r n^r + 1}{r - 2[-n]} \quad r - 2[-n] \neq 0 \quad (4)$$

$$\hookrightarrow n^r = t \rightarrow t^r - 2t - 1 = 0 \quad n^r = t \rightarrow n = \pm t$$

$$r \neq 2[-n] \rightarrow [-n] \neq r$$

$$r < -n \quad \text{or} \quad -r > n > -r$$

$$D_f = \mathbb{R} - (-r, r)$$

$$\text{ii) } f(n) = \sqrt{\frac{n(n^r-1)}{n^r+1}}$$

$$\Rightarrow f(n) = \sqrt{\frac{|n-r| - n^r}{|n-r| + n^r}}$$

(5)

$$\frac{n(n^r-1)}{n^r+1} \geq 0 \quad \begin{aligned} &\text{for } n > 0, \text{ we have } n^r+1 > 0 \\ &\text{for } n < 0, \text{ we have } n^r+1 < 0 \end{aligned}$$

$$|n-r| - n^r \geq 0 \quad \begin{aligned} &\text{for } n > 0, \text{ we have } |n-r| - n^r \geq 0 \\ &\text{for } n < 0, \text{ we have } |n-r| - n^r \geq 0 \end{aligned}$$

$$|n-r| - n^r \geq 0$$

$$-n^r - n + r \geq 0$$

$$(n-r)(n+1) \geq 0$$

$$n-r \geq 0 \quad \text{or} \quad n+1 \geq 0$$

$$n \geq r \quad \text{or} \quad n \geq -1$$

$$n \geq r \quad \text{or} \quad n \geq -1$$

$$n \geq r \quad \text{or} \quad n \geq -1$$

$$n \geq r \quad \text{or} \quad n \geq -1$$

$$n \geq r \quad \text{or} \quad n \geq -1$$

$$I \cap II \Rightarrow D_f = [-r, 1) - \{-1\}$$

n < 0

Subject

Date

$$y = \sqrt{(x-r)[x-r]} \quad \text{where } x=r \quad \text{and } [x]=r \quad \text{and } x < r$$

$$\frac{r}{+} \quad \frac{r}{0} \quad \frac{r}{+}$$

$$D_f = \mathbb{R}$$

$$\Rightarrow y = \sqrt{|x-1|[x-r]} \quad \text{where } x=1 \quad \text{and } [x]=r \rightarrow r \leq x < r$$

$$\frac{1}{-} \quad \frac{r}{-} \quad \frac{r}{+}$$

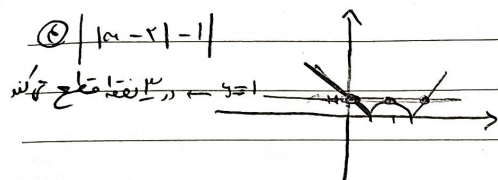
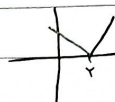
$$D_f = [r, +\infty) \cup \{1\}$$

$$y = \frac{1}{|x-r-1| - k}$$

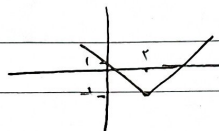
$$y = |x|$$



$$y = |x-r|$$



② $y = |x-r|-1$
k=1



$$f(x) = \frac{x^2 + rx + r}{x^2 + rx + r} \quad \text{where } x \neq -1, x \neq r$$

$$x^2 + rx + r = (x+1)(x+r)$$

$$x \neq -1 \quad \text{and} \quad x \neq r$$

$$D_f = \mathbb{R} - \{-1, r\}$$

$$x^2 - rx + r = 0 \quad \text{where } x=r \quad \text{and } 4r + 9 = 0 \rightarrow (x-r)^2 = 0$$

$$y = \log \log_{a+1} \frac{1}{x}$$

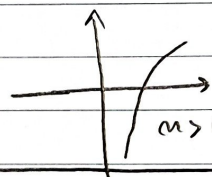
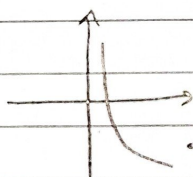
$$a+1 \neq 1 \rightarrow a \neq 0$$

$$a+1 > 0 \rightarrow a > -1$$

$$a > 0$$

$$\log \frac{1}{x} > 0 \rightarrow 0 < x < 1$$

$$D_f = (0, 1)$$



$$D_{f(x)} = [-\omega, r]$$

$$D_{f(x^2-1)} = ?$$

$$-a \leq x^2-1 \leq a$$

$$-a+1 \leq x^2 \leq a+1 \rightarrow x^2 \leq a+1$$

$$x^2 \leq \frac{r}{\sqrt{r}} \rightarrow \frac{-r}{\sqrt{r}} \leq x \leq \frac{r}{\sqrt{r}}$$

$$D_{f(x^2-1)} = \left[-\frac{r\sqrt{r}}{r}, \frac{r\sqrt{r}}{r} \right]$$

$$-\frac{r\sqrt{r}}{r} \leq x \leq \frac{r\sqrt{r}}{r}$$