

یازدهم رفته B

«مبانی سرفنی»

مبانی سرفنی

۲۰

Subject

Date

اگر $f(u) = \left(\frac{1}{2}\right)^{u-2} + 1$ باشد دانه‌ی تریف $u^3 f(u+1) \geq 0$ را برایت

$$u^3 f(u+1) \geq 0 \quad u^3 \left(\frac{1}{2} - 1\right) \geq 0 \quad (5)$$

$$\left(\frac{1}{2}\right)^{u-1} - 1 \geq 0 \rightarrow u \geq 0 \quad \left(\frac{1}{2}\right)^{u-1} \geq 1 \quad u \geq 0 \quad \text{حالت اول}$$

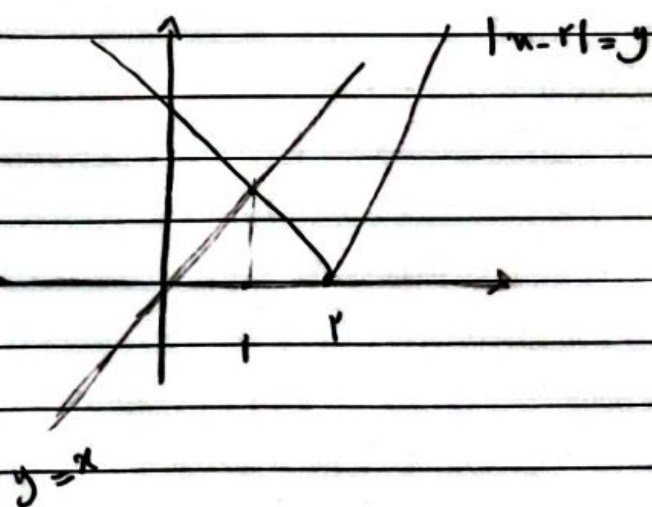
$$[1, \infty)$$

$$X \quad u > 0 \quad u \leq 0 \quad \left(\frac{1}{2}\right)^{u-1} - 1 \leq 0 \quad u^3 \leq 0 \quad \text{حالت دوم}$$

۲. اگر $f(u) = \sqrt{u+1} + u+2$ باشد دانه‌ی تابع $f(-u)$ را برایت آورید

$$f(-u) = \sqrt{-u+1} + |-u+2| \geq 0 \quad (5)$$

$$\rightarrow u \geq 2 \quad f(-u) = -u + u - 2 \geq 0 \quad X \quad (u \leq 2 \rightarrow f(-u) = -u - u + 2 = -2u + 2 \geq 0)$$



برای $u \leq 2$ عدد در هر دو طرف با لایه

$$D = (-\infty, 2]$$

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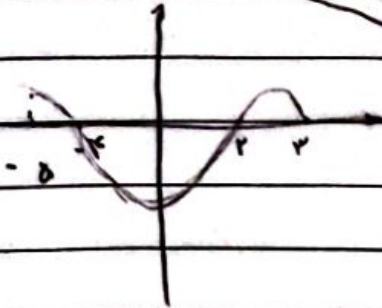
$$y = \sqrt{\frac{u-1}{f(u)}}$$

۳. اگر $f(u)$ در $u=1$ برابر ۰ باشد و $f(u)$ در $u=1$ برابر ۰ باشد

$$D: \frac{u-1}{f(u)} \geq 0$$

→ $f(u) > 0$ و $u-1 > 0$ یا $f(u) < 0$ و $u-1 < 0$

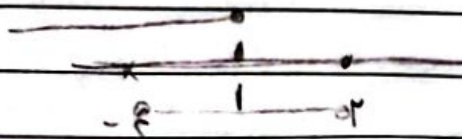
$$(u > 1) \cap ([-\infty, -4) \cup (2, 3)) \rightarrow (2, 3)$$



$f(u) < 0$ و $u-1 < 0$ حاصل می شود

$$u < 1 \cap (-4, 2) \rightarrow (-4, 1)$$

$$D = (2, 3) \cup (-4, 1)$$



۴. اگر $f(u) = 9u^2 - 7u - 4$ باشد و $y = \frac{1}{\sqrt{f(u)}}$ باشد

برای اینکه حاصل $\sqrt{-(a+b)}$ را به دست آوریم

$$9u^2 - 7u - 4 = (3u^2 + au + b)(3u^2 + u + 1)$$

به دست می آوریم

پس $a = -1$ و $b = -3$ و $\sqrt{-(a+b)} = \sqrt{-(-4)} = 2$

$$9u^2 - 7u - 4 = 0$$

$$-a = \frac{1}{3} \Rightarrow a = -1$$

$$b = -3$$

$$3u^2 + au + b = 0$$

$$y = \frac{1}{\sqrt{f(u)}} = \frac{1}{\sqrt{9u^2 - 7u - 4}}$$

$$y = \frac{1}{3} \times \frac{1+\sqrt{17}}{4} \times \frac{1-\sqrt{17}}{4}$$

$$\frac{1}{36} - \frac{17}{36} = -\frac{16}{36} = -\frac{4}{9}$$

$$\sqrt{-(-4)} = 2$$

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بکوه و $F(u) = u^r + u$ و $F(\frac{r}{u}) = (\frac{r}{u})^r + (\frac{r}{u})$

$$y = \sqrt{f(u) - f(\frac{r}{u})}$$

$$f(u) - f(\frac{r}{u}) \geq 0$$

$$u^r + u - (\frac{r}{u})^r - \frac{r}{u} \geq 0$$

البته $\sqrt{\quad}$ در ≥ 0

$$\left((u^r - \frac{r}{u})^r + (u - \frac{r}{u}) \right) \geq 0 \rightarrow \left((u - \frac{r}{u}) (u^r + r + \frac{16}{u^r}) \right) (u - \frac{r}{u})$$

$$(u - \frac{r}{u}) \geq 0 \Rightarrow (u - \frac{r}{u}) (u^r + r + \frac{16}{u^r}) \geq 0 \rightarrow$$

$$u - \frac{r}{u} \geq 0 \quad \frac{u^r - r}{u} \geq 0 \quad u^r - r = 0 \quad u = r$$

	$-r$	0	r	
$u^r - r$	+	0	-	+
u	-	-	+	+
$u^r - r$	-	0	+	-
u	-	+	-	+

$$Df = [r, 0) \cup [r, +\infty)$$

$f(r) + f(1) = 1 + 7 = 8$ و $f(u + u) = r u^r - 1$

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

$$f(r) \Rightarrow u = 1 \Rightarrow f(1 + 1) = r(1)^r - 1 \Rightarrow f(r) = 1$$

$$f(1) \Rightarrow u = r \Rightarrow f(r + r) = r(r)^r - 1 \Rightarrow f(1) = 7$$

$$f(r) + f(1) = 1 + 7 = 8$$

$$(u-r)^r = u^r - \lambda - r u^r x^r + r(u)(r)$$

$$u^r - \lambda - 4u^r + 12u$$

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$$g(\sqrt{r} - r)$$

$$g(u) = u^r + 9u^r + r\sqrt{u} \quad f(u) = u^r - 4u + 12u$$

$$f(\sqrt{r} + r)$$

$$u^r - 4u + 12u = (u-r)^r + \lambda$$

$$f(u) = u^r - 4u + 12u = (u-r)^r + \lambda$$

$$g(u) = u^r + 9u^r + r\sqrt{u} = (u+r)^r - r\sqrt{u}$$

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

$$f(u) = (\sqrt{r} + r - r)^r + \lambda = r + \lambda = 10$$

$$\frac{g(\sqrt{r} - r)}{f(\sqrt{r} + r)} = \frac{-r\sqrt{r}}{10} = -\frac{r\sqrt{r}}{10}$$

$$u \geq r \quad g(u) = \sqrt{u - r\sqrt{u - r}} \quad f(u) = \sqrt{u + r\sqrt{u - r}}$$

$$\frac{a+b}{c} \quad f(u) + g(u) = a + b\sqrt{u} + c$$

$$(f(u) + g(u))^r = (\sqrt{u + r\sqrt{u - r}} + \sqrt{u - r\sqrt{u - r}})^r$$

$$u + r\sqrt{u - r} + u - r\sqrt{u - r} + 2\sqrt{u^2 - 19(u - r)}$$

$$2u + 2\sqrt{(u - r)^2} \quad u^2 - 19u + 9r$$

$$= 2u + 2|u - r| \quad (u - r)^r$$

$$2u - 2u + 19 = 19$$

$$r \leq u \leq \lambda$$

$$f(u) + g(u) = \sqrt{r(u - r)} = r\sqrt{u - r} = a + b\sqrt{u} + c$$

$$a = 0$$

$$b = r$$

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

یازدهم رتبه

مسابقات ریاضی

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$$g(u) = \{ (2, 1), (1, 0), (3, 5), (0, 4) \}$$

$$f(u) = \frac{u+2}{u^2-4u+4}$$

پیش فرض

$$g = \{ (2, 1), (1, 0), (3, 5), (0, 4) \}$$

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$$f \rightarrow \{ (2, 1), (1, 0), (3, 5), (0, 4) \}$$

$$\frac{g}{f} = \{ (2, 1), (1, 0), (3, 5), (0, 4) \}$$

فرض

$$g(u) = \{ (-2, 3), (1, 1), (2, 2), (0, 1) \}, f(u) = \{ (2, 1), (1, 0), (3, 5), (0, 4) \}$$

نیمه

اصل

$$f(2u) = \{ (2, 1), (1, 0), (3, 5), (0, 4) \}$$

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$$f(u^2) = \{ (2, 1), (1, 0), (3, 5), (0, 4) \}$$

مبنا مشرقی

Subject

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$$f_g(u) + 1 = \{(-1, 2), (1, 5), (3, 17), (-1, -1)\}$$

چهار

$$f_g = \{(1, -4), (3, 17)\}$$

Find root - V

$$f(u) = u^3 - 9u^2 + 17u$$

$$u(u^2 - 9u + 17)$$

$$\frac{g(u)}{f(u)} = \frac{-r_0}{10} = -r$$

$$f(\sqrt[3]{r} + r)(\sqrt[3]{r} + r)^2 - 9(\sqrt[3]{r} + r) + 17$$

$$(\sqrt[3]{r} + r)(\sqrt[3]{r} + r + r\sqrt[3]{r} - 9\sqrt[3]{r} - r + 17)$$

$$(\sqrt[3]{r} + r)(r + \sqrt[3]{r} - r\sqrt[3]{r}) = 17 - 10r = 0$$

$$r\sqrt[3]{r} + r - r\sqrt[3]{r} + 17 - r\sqrt[3]{r} - 9\sqrt[3]{r} = 17 - 10r = 0$$

$$g(u) = u^3 + 9u^2 + 17u = u(u^2 + 9u + 17)$$

$$f(\sqrt[3]{v} - r) = (\sqrt[3]{v} - r)((\sqrt[3]{v} - r)^2 + 9(\sqrt[3]{v} - r) + 17)$$

$$(\sqrt[3]{v} - r)(\sqrt[3]{v} + 9 - 9\sqrt[3]{v} + 9\sqrt[3]{v} - r + 17)$$

$$(\sqrt[3]{v} - r)(\sqrt[3]{v} + 9 + r\sqrt[3]{v})$$

$$v + 9\sqrt[3]{v} + r\sqrt[3]{v} + 9r - r\sqrt[3]{v} - 17 - 9\sqrt[3]{v} = -r_0$$