

$$الف) \left(\sqrt{\frac{x}{r} - \left\lfloor \frac{x}{r} \right\rfloor} \right)^2 = \left(\left\lfloor \frac{x}{r} \right\rfloor + 1 \right)^2 = \left\lfloor \frac{x}{r} \right\rfloor + 1$$

$$ب) \log_{10} y = \sin x + r \quad y = 10^{\sin x + r}$$

$$\min \rightarrow 10^{-1+r} = 10^r$$

$$\max = 10^{1+r} = 10^{\omega} \quad Rg = [10^r, 10^{\omega}]$$

$$P(x) = \sqrt{\frac{x^2 - r}{x^2 - 9}} = y$$

$$y^2 = \frac{x^2 - r}{x^2 + 9} \quad x^2 = \frac{-9y^2 + r}{y^2 - 1} = \frac{9y^2 - r}{y^2 - 1} = x^2$$

$$\frac{9y^2 - r}{y^2 - 1} \geq 0 \quad \begin{array}{c} -\frac{r}{9} \quad -1 \quad 0 \quad 1 \quad \frac{r}{9} \\ \hline - \quad + \quad + \quad - \quad + \end{array}$$

بالہ غیرتہ از صوابہ چون x^2 غیرتہ صوابہ

$$Rf = [0, 1) \cup \left[\frac{r}{9}, +\infty \right)$$

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notes

ج) $f(x) = x + \frac{1}{x} + \sqrt{x + \frac{1}{x}}$ $x + \frac{1}{x} = t$ $- \infty$

$x > 0 \rightarrow t \geq 2$

$x < 0 \rightarrow t \in (-\infty, -2]$ $R_f [t + \sqrt{t} + \infty) \xrightarrow{t=-2}$

$R_f = [2 + 2\sqrt{2} + \infty)$

ب) $y = 1 - \sin 2x (1 + \sin x)$ $y = -\sin^2 x + \sin x + 1$

$R_f [0, 1]$

$\begin{cases} \sin 2x = -1 \rightarrow y = 0 \end{cases}$

$\begin{cases} \sin 2x = 1 \rightarrow y = 1 \end{cases}$

$\begin{cases} \sin x = \frac{-b}{2a} = 1 \rightarrow y = 1 \end{cases}$

notes

$$x = \omega \quad y = \frac{r\omega}{\mu} \quad \cancel{x=4} \quad y=1 \quad x=4 \quad y = \frac{r\mu}{1}$$

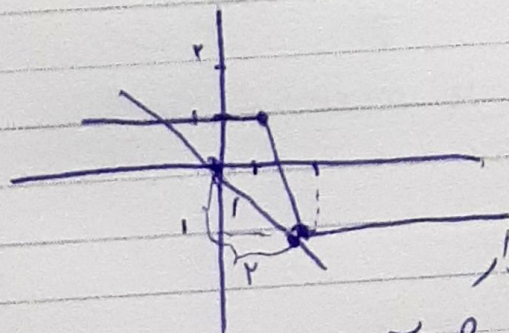
$$x=1 \quad y=\frac{44}{10} \quad x=9 \quad y=V$$

$$\frac{p_9}{\mu} + \frac{p_1}{\mu} + \frac{p_Y}{\mu} + \frac{p_Q}{\mu} + \frac{p_W}{\mu} + \frac{p_P}{\mu} + V + 1 + 9 = V_Q$$

د- چونکہ $a = 0$ ہے، اس لیے دار $\frac{1}{x}$ کے دو طریق مختلف نکالتے ہیں۔
 $x = 4$ $y = 0$ $x = 3$ $y = 1$

$$\begin{cases} rb + c = 0 \\ rb + c = 1 \end{cases} \Rightarrow \begin{cases} -rb - c = 0 \\ rb + c = 1 \end{cases} \Rightarrow \begin{matrix} b = 1 \\ c = -1 \end{matrix}$$

$$g(x) = \sqrt{x^2 + 0x + 1} = \sqrt{x^2 + 1} = \sqrt{(x+0)^2 + 1} = \sqrt{(x+0)^2 + 1}$$



طریق دانستن دو ریشه به دو بار با نمودار

قدر مطلق به خود دانسته باشد ریشه

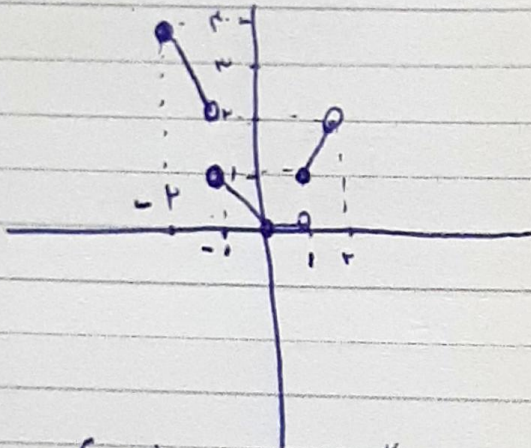
شیب آن با $\frac{1}{2}$ باشد

$$K_c = \frac{1}{P} \quad \text{Kilofewton per square meter}$$

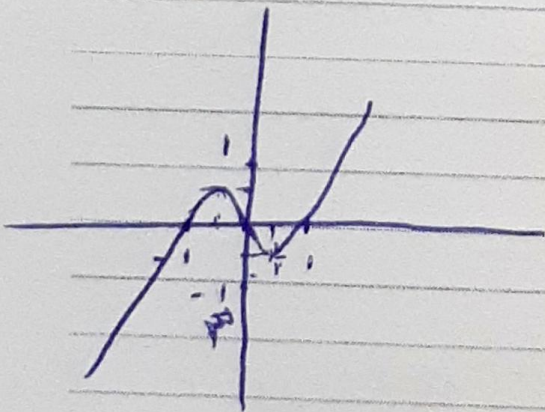
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notes

الف) $0 \leq x < 1 \rightarrow 0 \quad \Rightarrow \quad \frac{1}{x} x < 1 = x \quad -V$

$x \rightarrow \infty \quad -\frac{1}{x} x < 0 = -x \quad -x < x < -1 \rightarrow -x x$



ب) $\begin{cases} x > 0 & x^r - x & x = \frac{1}{r} & x = 0, 1 \\ x < 0 & -x^r - x & x = -\frac{1}{r} & y = \frac{1}{r} \end{cases}$



-1

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

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

$$y \neq -2, 0$$

-2

$$\frac{(\sqrt{x}-1)(\sqrt{x}-3)}{(\sqrt{x}-1)(\sqrt{x}-1)} \quad R_f = (-\infty, 1) \cup (3, +\infty)$$

$$x=0 \quad y=3$$

$$+\infty = x \quad y=1$$

اگر این را داریم

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

$$x+1 = -1+1 = 0 \quad x+1 = 1+1 = 2 \quad 2+1 = 3$$