



Year: _____ Month: _____ Date: _____ ()

Subject: _____

نسترن امارت

$$y = x^r - \Delta \rightarrow x^r = y + \Delta \rightarrow x = \pm \sqrt[r]{y + \Delta}$$

$$\begin{aligned} y + \Delta > 0 \\ y \geq 0 \end{aligned} \rightarrow R_f = [-\Delta, +\infty)$$

$$y = x^r + 1 \rightarrow x^r = y - 1$$

$$\rightarrow x = \sqrt[r]{y-1} \Rightarrow R = [1, +\infty)$$

$$y = x^r - rx + r$$

$$\rightarrow r + r \quad y = x^r - rx + r + r \rightarrow (x-r)^r + r = y$$

$$(x-r)^r = y-r \rightarrow x-r = \pm \sqrt[r]{y-r}$$

$$x = \pm \sqrt[r]{y-r} + r \quad R = [r, +\infty)$$

$$y = x^r - \Delta x + 1$$

$$\left(\frac{-\Delta}{r}\right)^r = \frac{r\Delta}{r} \quad \Delta x + \frac{r\Delta}{r} + 1 - \frac{r\Delta}{r}$$

$$\rightarrow \frac{r\Delta}{r}$$

$$\frac{x^r + r}{x^r - r}$$

$$y x^r - r y = x^r + r \rightarrow y x^r - x^r = r + r y \rightarrow x^r (y-1) = r + r y \rightarrow$$

$$x^r = \frac{r + r y}{y-1} \rightarrow x = \pm \sqrt[r]{\frac{r + r y}{y-1}}$$

$$y > 0$$

$$y > 1 \quad R_f = (1, +\infty)$$

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

$$y|x| - r y = r|x| + 1 \rightarrow y|x| - r|x| = 1 + r y \rightarrow |x|(y-r) = 1 + r y$$

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

$$R_f = \left(-\infty, -\frac{1}{r}\right] \cup (r, +\infty)$$

$$y = \frac{1}{x^r - rx}$$

$$\rightarrow y x^r - r x y = 1 \rightarrow y x^r - r x y - 1 = 0 \quad \Delta = (ry)^2 - 4(-1)(y) = 4y^2 + 4y > 0$$

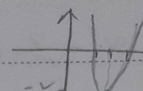
$$R_f =$$

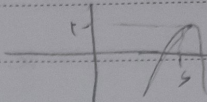
$$\frac{-\frac{1}{2}}{+\frac{1}{2} - \frac{1}{2} +}$$

$$\left(-\infty, -\frac{1}{r}\right] \cup (r, +\infty)$$

$$ry(r y + 1) > 0$$

$$y > 0$$

$$y = x^2 - 4x + 2 \rightarrow \min \left| \begin{array}{l} -\frac{b}{2a} = \frac{4}{2} = 2 \\ y = -\frac{\Delta}{4a} = -1 \end{array} \right. \rightarrow R_f = [-1, +\infty) \quad \text{--- 5}$$


$$y = -x^2 + 5x + 2 \rightarrow \max \left| \begin{array}{l} -\frac{b}{2a} = \frac{5}{-2} = -2.5 \\ y = 4 \end{array} \right. \rightarrow R_f = (-\infty, 4] \quad \text{--- 5}$$


$$y = \sqrt{x^2 - 8x + 2} \rightarrow \min \left| \begin{array}{l} \frac{y}{x} = 2 \\ -1 \end{array} \right. \rightarrow R_f = \sqrt{[-1, +\infty)} \rightarrow R_f = [0, +\infty) \quad \text{--- 5}$$

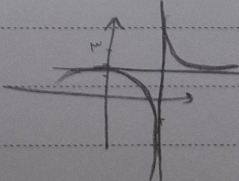
$$y = \sqrt{-x^2 + 4x + 10} \rightarrow \max \left| \begin{array}{l} 2 \\ 1 \end{array} \right. \quad R_f = \sqrt{[-1, 2.5]} \rightarrow R_f = [0, 2.5] \quad \text{--- 5}$$

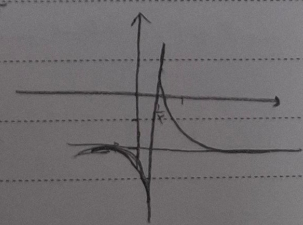
$$y = x^2 + 3x^2 + 2x + 1 \rightarrow R_f = \{R\} \quad \text{--- 5}$$

$$y = \sqrt{x^2 + 5x^2 + 4x + 1} \rightarrow R_f = \sqrt{[R]} \rightarrow R_f = [0, +\infty) \quad \text{--- 1}$$

$$y = \frac{3x+1}{x-2} \quad R_f = R - \left\{ \frac{3}{2} \right\} \rightarrow R_f = [R - \{2\}] \quad \text{--- 1}$$

$$y = \sqrt{\frac{3x+1}{x+2}} \rightarrow R_f = [R - \left\{ \frac{3}{2} \right\}] \rightarrow R_f = [0, +\infty) - \left\{ \frac{3}{2} \right\}$$

$$y = \frac{3x+1}{x-2} \quad \begin{array}{l} \mu_0' = x-2=0 \rightarrow x \neq 2 \\ \text{افقی} = \frac{a}{c} = 3 \end{array} \quad \text{--- 9}$$


$$y = \frac{6x-2}{1-2x} \quad \begin{array}{l} \mu_0 = 1-2x=0 \rightarrow 1/2 \neq x \\ \text{افقی} = \frac{a}{c} = \frac{6}{-2} = -3 \end{array}$$


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$$y = (\cos x)^2 + \frac{1}{\cos x} \in [1, 2 + \infty)$$

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$$y = \sqrt{\frac{x^2+1}{x}} \rightarrow y = \sqrt{x+\frac{1}{x}} \rightarrow R_f = (-\infty, -1] \cup [1, +\infty)$$