

را کلیدی تلفیف شماره 9

الف) $y = x^2 - \omega \Rightarrow x^2 = y + \omega$

(1)

$$x = \pm \sqrt{y + \omega} \Rightarrow y + \omega \geq 0$$

ب) $y = x^2 + 1 \Rightarrow x^2 = y - 1$ $R_f = [-\omega, +\infty)$

$$x = \pm \sqrt{y - 1} \Rightarrow R_f = \mathbb{R}$$

الف) $y = x^2 - (x + 2)$

$y = (x - 2)^2 + 2 \Rightarrow y - 2 = (x - 2)^2$

(2)

$$\sqrt{y - 2} = x - 2 \Rightarrow x = \pm \sqrt{y - 2} + 2$$

$$\Rightarrow y - 2 \geq 0$$

$$y \geq 2$$

$$R_f = [2, +\infty)$$

ب) $y = x^2 - \omega x + 1$

~~$$y = x^2 - \omega x + 1 + \omega/4 - \omega/4$$~~

~~$$y = x^2 - \omega x + 1 + \omega/4 - \omega/4$$~~

~~$$y = (x - \omega/2)^2 - \omega^2/4 + 1$$~~

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$$y = x^2 - \omega x + 1 + \omega/4 - \omega/4$$

~~$$y = x^2 - \omega x + 1 + \omega/4 - \omega/4$$~~

$$y = (x - \omega/2)^2 - \omega^2/4 + 1$$

$$y + \omega^2/4 = (x - \omega/2)^2$$

$$\pm \sqrt{y + \omega^2/4} = x - \omega/2$$

$$\Rightarrow x = \pm \sqrt{y + \omega^2/4} + \omega/2$$

$$\Rightarrow y + \omega^2/4 \geq 0$$

$$y \geq -\omega^2/4$$

$$R_f = [-\omega^2/4, +\infty)$$

$$1 = (1 - \frac{1}{2}(\lambda - x))R$$

$$1) = (R_3 - xR) \times$$

$$\frac{3 \cdot (1-x)}{1} = R$$

$$1 = \frac{x^3 - x}{1} = h$$

$$\left[\frac{f}{1-\infty} \right] = \Delta \leq \frac{1}{1-\infty} - \phi +$$

$$0 \leq \frac{1-p}{1+p_3} \leq \frac{1-p}{1+p_3} = 1 \times 1$$

$$1 + L_2 = (1 - L_2) \times 1$$

$$1 \rightarrow R_3 = 1 \times 1_2 - 1 \times 1_1 R_2$$

$$1 + 1 \times 12 = 23 - 1 \times 1 \quad \Rightarrow \quad \frac{23 - 1 \times 1}{1 + 1 \times 12} = 2 \quad \checkmark$$

$$\Rightarrow R_f = (1 - \omega) \cdot \infty$$

$$\frac{+f - \phi +}{1 \quad m/1 -}$$

$$= \frac{1-p}{1+p}$$

$$\frac{1-R}{2+R} \cdot \frac{1}{1-R} = x$$

$$\frac{1}{2 + \frac{1}{2}} = \frac{2}{5}$$

$$r + R_2 = (1 - R_2) \times$$

$$L_1 + L_2 = L_1 \times L_2$$

$$x^{\alpha+\beta} = x^{\alpha} \cdot x^{\beta} \Rightarrow \frac{x^{\alpha+\beta}}{x^{\alpha}} = x^{\beta} \quad \text{Q.E.D.}$$

$$\text{الف) } y = x^2 - 4x + 2 \Rightarrow a > 0 \Rightarrow \text{Min} \quad (2)$$

$$x_{\min} = \frac{-b}{2a} = \frac{4}{2} = 2$$

$$y_{\min} = 2^2 - 4 \times 2 + 2 = -2 \Rightarrow R_f = [y_{\min}, +\infty)$$

$$= [-2, +\infty)$$

$$\text{ب) } y = -x^2 + 4x + 2 \Rightarrow a < 0 \Rightarrow \text{Max}$$

$$x_{\max} = \frac{-b}{2a} = \frac{-4}{-2} = 2$$

$$y_{\max} = -2^2 + 4 \times 2 + 2 = 6$$

$$\Rightarrow R_f = (-\infty, y_{\max}]$$

$$= (-\infty, 6]$$

$$\text{الف) } y = \sqrt{x^2 - 4x + 2} \xrightarrow{x^2 - 4x + 2} a > 0 \Rightarrow \text{Min} \quad (3)$$

$$x_{\min} = \frac{-b}{2a} = 2$$

$$y_{\min} = \sqrt{2^2 - 4 \times 2 + 2} = \sqrt{-2}$$

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

$$= [0, +\infty)$$

$$\text{ب) } y = \sqrt{-x^2 + 4x + 1} \xrightarrow{-x^2 + 4x + 1} a < 0 \Rightarrow \text{Max}$$

$$x_{\max} = \frac{-b}{2a} = \frac{-4}{-2} = 2$$

$$y_{\max} = \sqrt{-2^2 + 4 \times 2 + 1} = \sqrt{5}$$

$$\Rightarrow R_f = \sqrt{(-\infty, 5]}$$

$$= [0, \sqrt{5}]$$

$$\text{الف) } y = x^4 + 3x^2 + 2x + 1 \quad (4)$$

$$\Rightarrow R_f = \mathbb{R} \Rightarrow \text{بزرگترین توان فرد}$$

$$\text{ب) } y = \sqrt{x^4 + 4x^2 + 4x + 1}$$

$$\Rightarrow R_f = \sqrt{\mathbb{R}} = [0, +\infty)$$

$$\Rightarrow \text{بزرگترین توان فرد}$$

$$y = \frac{3x+1}{x-2} \quad \text{الف}$$

$$ad \neq bc$$

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$$3 \times (-1) \neq 1 \times 1 \quad \checkmark$$

تابع هذکرافید $\Rightarrow$

$$R_f = \mathbb{R} - \left\{ \frac{a}{c} \right\} = \mathbb{R} - \{3\}$$

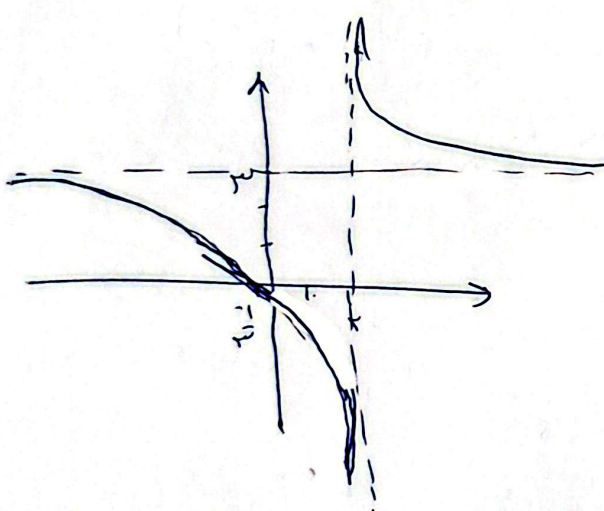
$$y = \sqrt{\frac{x-1}{x+3}} \quad \text{ب}$$

$$ad \neq bc \Rightarrow$$

$$\text{تابع هذکرافید} \Rightarrow R_f = \sqrt{\mathbb{R} - \left\{ \frac{a}{c} \right\}}$$

$$= \sqrt{\mathbb{R} - \{1\}} = [0, +\infty) - \{1\}$$

$$y = \frac{3x+1}{x-2} \quad \text{الف}$$

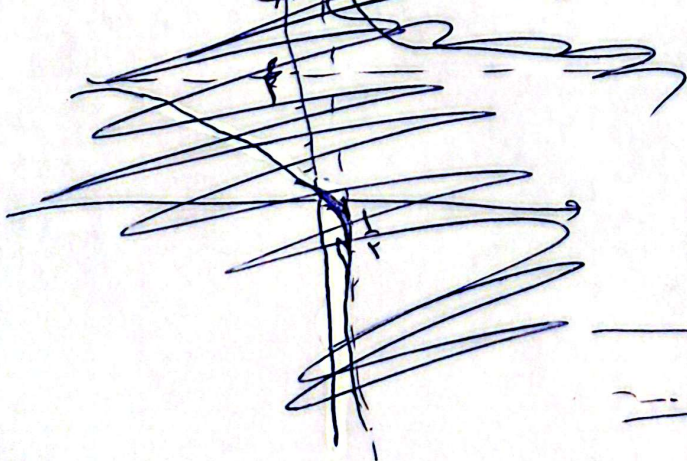


$$19 \quad \text{مجاوب عمود} = \text{رشته خارج} = 2$$

$$3 = \text{مجاوب افقی} = \frac{a}{c}$$

$$\text{اگر } x = -\frac{1}{3} \text{ باشد } y = 0$$

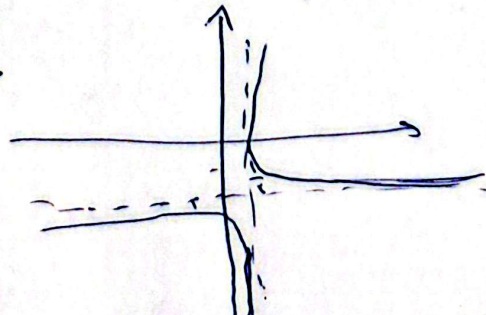
$$y = \frac{4x-2}{1-2x} \quad \text{ب}$$



$$\text{مجاوب قائم} = \frac{1}{2}$$

$$\text{مجاوب افقی} = \frac{4}{-2} = -2$$

$$\text{اگر } x = \frac{1}{4} \text{ باشد } y = 0$$



$$\text{الف } y = \cos^2 x + \frac{1}{\cos^2 x} \Rightarrow \cos^2 x + \frac{1}{\cos^2 x} \geq 2 \quad (1)$$

$$\cos^2 x \quad \text{حيث } > 0 \Rightarrow a + \frac{1}{a} \xrightarrow{a > 0} a + \frac{1}{a} \geq 2$$

$$\Rightarrow R_f = [2, +\infty)$$

$$\text{ب } y = \sqrt[3]{\frac{x^2 + 1}{x}}$$

$$y = \sqrt[3]{\frac{x^2}{x} + \frac{1}{x}} = \sqrt[3]{x + \frac{1}{x}}$$

$$x + \frac{1}{x} \geq 0$$

$$x + \frac{1}{x} \leq 0$$

قسمی تولید برآورد از صفر

قسمی تولید

$$\Rightarrow R_f = \sqrt[3]{(-\infty, -2] \cup [2, +\infty)}$$

$$= (-\infty, -2] \cup [2, +\infty)$$