

۱۱, ۷۵ را کلیدی تکلیف شماره ۹

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

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

ب) $y = x^2 + 1 \Rightarrow x^2 = y - 1$
 $x = \pm \sqrt{y - 1} \Rightarrow R_f = [-\omega, +\infty)$
 $y \geq -\omega$
 $R_f = [-\omega, +\infty)$ (۲)

الف) $y = x^2 - (x + 2)$

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

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

$\Rightarrow y - 2 \geq 0$

$y \geq 2$

$R_f = [2, +\infty)$ (۲)

ب) $y = x^2 - \omega x + 1$

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

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

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

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

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

$y = (x - \omega/2)^2 - \omega^2/4 + 1$ (۲)

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

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

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

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

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

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

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

1) ~~$= (h_3 - x h) \times$~~

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

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

$$1 \rightarrow R_3 = 1 \times 1_2 - 1 \times 1_R$$

$$\Rightarrow R_f = (-\infty, -1) \cup (1, +\infty)$$

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

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

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



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

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

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

$$\text{ب) } y = -x^2 + 4x + 2 \Rightarrow a < 0 \Rightarrow \text{Max} \quad (3)$$

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

$$y_{\max} = -2^2 + 4 \times 2 + 2 = 6 \Rightarrow R_f = (-\infty, y_{\max}] = (-\infty, 6]$$

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

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

$$y_{\min} = \sqrt{2^2 - 4 \times 2 + 2} = \sqrt{-2} \Rightarrow R_f = \sqrt{[-2, +\infty)} = [0, +\infty)$$

$$\text{ب) } y = \sqrt{-x^2 + 4x + 1} \xrightarrow{-x^2 + 4x + 1} a < 0 \Rightarrow \text{Max} \quad (5)$$

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

$$y_{\max} = \sqrt{-2^2 + 4 \times 2 + 1} = \sqrt{5} \Rightarrow R_f = \sqrt{(-\infty, 5]} = [0, \sqrt{5}]$$

$$\text{الف) } y = x^4 + 3x^2 + 2x + 1 \quad (6)$$

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

$$\text{ب) } y = \sqrt{x^4 + 4x^2 + 4x + 1} \quad (7)$$

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

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

$$ad \neq bc$$

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

تابع هذکرافید

=>

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

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

$$ad \neq bc \Rightarrow$$

تابع هذکرافید

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

$$= \sqrt{\mathbb{R} - \{1\}} = [0, +\infty) - \{2\}$$

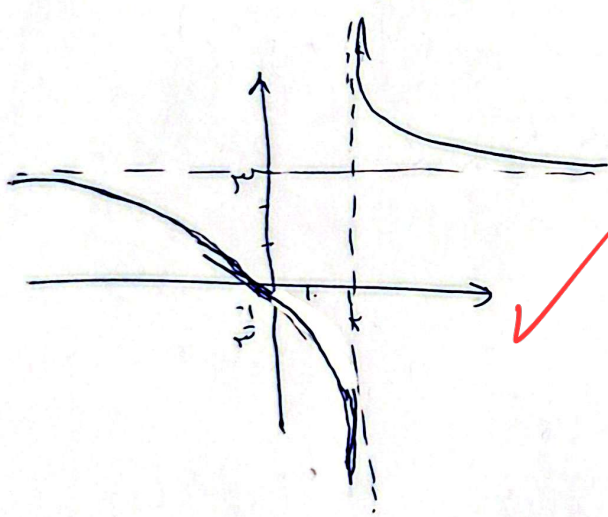
$$y = \frac{3x+1}{x-2}$$

۱۹ حایب عمود = ایشیه خرج

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

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

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

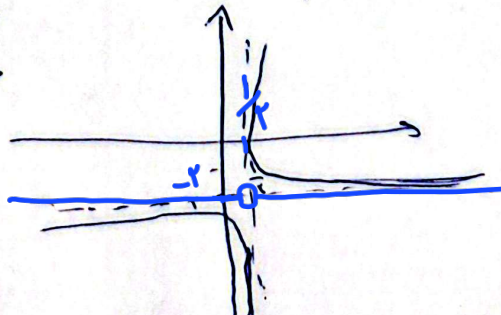
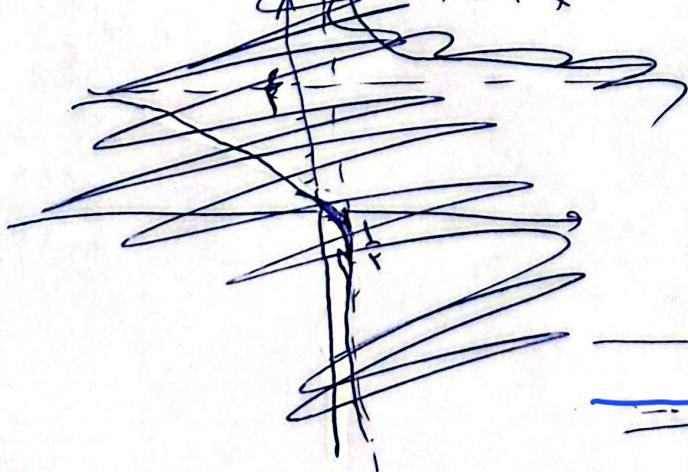
$$y = -2$$

$$a \neq \frac{1}{c}$$

$$\text{حایب قائم} = \frac{1}{c}$$

$$\text{حایب افقی} = \frac{a}{c} = -2$$

$$\text{اگر } x = \frac{1}{2} \text{ باشد } y = 0$$



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

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

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

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

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

1,75

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

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

قسمی تولید برآورد از صفر
قسمی تولید برآورد از صفر

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

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