

$$f(n) = \sqrt{n+\epsilon} \Rightarrow \sqrt{(n-\epsilon)+\epsilon} \Rightarrow \sqrt{(n-\epsilon)+\epsilon} \xrightarrow{n \rightarrow \infty} \sqrt{n-\epsilon} + \epsilon$$

$$g(n) = \sqrt{n-\epsilon} \Rightarrow \sqrt{(n-\epsilon)-\epsilon} \Rightarrow \sqrt{(n-\epsilon)-\epsilon} \xrightarrow{n \rightarrow \infty} \sqrt{n-\epsilon} - \epsilon$$

$$f(n) + g(n) = \sqrt{n-\epsilon} \Rightarrow a=0 \quad b=\epsilon \quad c=-\epsilon \quad \frac{0+\epsilon}{-\epsilon} = -\frac{1}{\epsilon}$$

$$f(n) = \frac{n+\epsilon}{n^2+\epsilon n+\epsilon} \quad g(n) = \{(1,1), (1,0), (0,1), (0,\epsilon)\} \quad \frac{g}{f} \Rightarrow f \neq 0$$

$$\Rightarrow n \neq -\epsilon, 1 \quad \frac{g}{f} = \{(0,1), (1, \frac{1}{\epsilon})\}$$

$\frac{c_1}{\theta}$	θ	$cg(n)+1$	(θ)	$f(n) =$	(θ)	$f(n) =$	(θ)
$\{(1, -\epsilon), (0, -1), (-1, X)\}$		$\{(1, 1), (1, 1), (1, 1), (1, 1)\}$		$\{(1, 1), (-1, 1), (1, -1)\}$		$\{(1, 1), (1, 1), (1, 1)\}$	
$\downarrow$				$\{(1, 1), (1, 1), (1, 1)\}$		$\{(1, 1), (1, 1), (1, 1)\}$	
$[(-1, -\epsilon), (0, -1)]$							

$h: f+g$

$h: \{(1, 1), (1, 1), (1, 1)\}$

$$f(n) = \frac{\sqrt{n} - n}{n - 1} \quad g(n) = [n] + [1, n] \quad g \neq -1$$

$n \in \mathbb{Z} \Rightarrow n \neq 1 \Rightarrow \sqrt{n} > n$

$n \in \mathbb{Z} \Rightarrow g(n) = [n] + [1, n]$

$n \notin \mathbb{Z} \Rightarrow g(n) = [n] + [1, n]$

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$$f(x) = \sqrt{x^2 + 4x - 12} \quad g(x) = \{(4, 0), (0, 4), (1, 1)\} \quad h(x) = \frac{f(x)}{g(x)}$$

$$R_f = -x^2 + 4x - 12 \geq 0 \quad -(x-2)(x-6) \geq 0 \quad \frac{1}{+} \frac{2}{+} \frac{1}{+} \quad R_f = [2, 6]$$

$$(x-2)(x-6) \leq 0$$

$$h(x) = \left\{ \left(4, 0 \right), \left(0, 4 \right), \left(1, 1 \right) \right\}$$

$$y = \frac{1}{x^2 - 1} \Rightarrow yx^2 - yx - 1 = 0$$

$$x = \frac{+y \pm \sqrt{y^2 - 4(-1)(y)}}{2y} \quad y \neq 0$$

$$y^2 + 4y \geq 0 \quad y(y+4) \geq 0$$

$$\frac{1}{+} \frac{1}{+} \frac{1}{+} \quad R_f = (-\infty, -4] \cup (0, +\infty)$$

$$y = x^2 - (x^2 + x + 1) = -x - 1$$

$$y = -x - 1 \Rightarrow y - 1 = -x - 2 \Rightarrow x = -y - 1$$

$$R_f = \mathbb{R}$$

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

$$\frac{-4}{-2} = 2$$

$$y_{\min} = -9 + 11 + 9 = 11$$

$$\sqrt{(-\infty, 9]}$$

$$\Rightarrow (0, 11] = R_f$$

$$y = \sqrt{x^2 - 4x + 4} \quad (2)$$

$$\frac{+4}{2} = 2$$

$$y_{\min} = \sqrt{4 - 1 - 4} = 1$$

$$\sqrt{[-1, +\infty)} \cup [0, +\infty)$$

$$y = -x^2 + 4x + 1 \quad (3)$$

$$\frac{-4}{-2} = 2$$

$$-9 + 11 + 1 = y = 1$$

$$R_f = (-\infty, 15]$$

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

$$\frac{+4}{2} = 2$$

$$y_{\min} = 4 - 1 + 1 = 4$$

$$R_f = [4, +\infty)$$

$$y = 15\sqrt{x} = 15x^{\frac{1}{2}}$$

$$x \geq 0$$

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

$$(5)$$

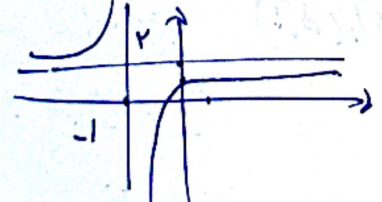
$$[0, +\infty) = R_f$$

$$(6)$$

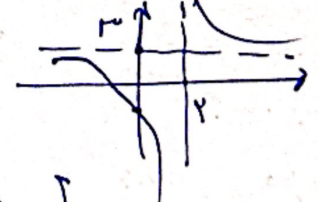
$$R_f = \mathbb{R}$$

$$(7)$$

$$R_f = \mathbb{R}$$

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


$$R_f = \mathbb{R} - \{1\}$$

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


$$R_f = y - \{1\}$$