

$$\begin{aligned} 2x^2 - 4x + 1 &= -y - 2y \\ 2x^2 - 4x + 1 &= -(y^2 + 4y) \\ &= -y^2 - 4y \end{aligned}$$

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$$\text{if } x \geq a$$

$$d^2 + 4d = 2d + d + 2$$

$$d^2 + d - 2 = 0$$

$$(d-1)(d+2) \geq 0$$

$$\begin{cases} d \geq 1 \\ d \geq -2 \end{cases} \Rightarrow f(1) = 0$$

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$$|x+1| \geq 2$$

$$|x+1| \geq 2$$

$$+x+1 \leq -2$$

$$x \leq -3 \Rightarrow x \geq 1$$

$$-c \leq x \leq -1 \quad a+2x$$

$$x \geq 1 \Rightarrow x \geq b$$

$$x \leq -c \Rightarrow x \leq b$$

$$\text{if } x \leq -c$$

$$a+b = 11-b$$

$$a+b = 11$$

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$$\sqrt{4x-a} \Rightarrow 4x-a \geq 0$$

$$\text{if } x \geq 2 \Rightarrow a \leq 8$$

$$\text{if } x = 2$$

$$\begin{aligned} \sqrt{b-4x} & \quad b \leq 8 \\ b & \geq 4x \\ b & \geq 8 \end{aligned}$$

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$$\frac{1}{|x+1|} + \sqrt{\frac{4-x}{x^2+2x+2}}$$

$$\frac{1}{|x+1|} \quad \text{if } x \geq -1 \Rightarrow \frac{1}{|x+1|} = 1 \sqrt{\frac{4-x}{x^2+2x+2}}$$

$$\frac{1}{|x+1|} = 1 \sqrt{\frac{4-x}{x^2+2x+2}} \quad \begin{aligned} & 4-x \geq 0 \\ & x \geq -4 \end{aligned}$$

$$\begin{aligned} & \text{ب) } [x] \geq 0 \\ & [x] \geq 2 \Rightarrow x \geq 2 \end{aligned}$$

$$1 \leq [x] \geq 0 \Rightarrow 2 \leq x \quad D_f = \emptyset$$

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الف) $\frac{x^2 - x - 6}{x^2 - 10x + 24} \geq 0 \Rightarrow \frac{(x-6)(x+2)}{(x-4)(x-9)} \geq 0$ $D_f = (-\infty, -2) \cup (4, 6) \cup (9, +\infty)$ ب) $\frac{x^2 - 2x^2 - 5x + 4}{x^2 + 2x^2 - 5x + 4}$	6
الف) $[x] - 2 \geq 0 \Rightarrow [x] \geq 2 \Rightarrow x \in [2, +\infty)$ ب) $\frac{5x^2 + 4}{[x]^2 - 2[x] - 6} \geq 0$ $D_f = (-\infty, -2) \cup (4, +\infty)$	7
الف) $\frac{\cot x + 1}{\tan x + 1} \geq 0$ $\sin x \neq 0 \Rightarrow x \neq k\pi$ $\cos x \neq 0 \Rightarrow x \neq k\pi + \frac{\pi}{2}$ $\tan x \neq -1 \Rightarrow x \neq k\pi - \frac{\pi}{4}$ $D_f = \mathbb{R} \setminus \{k\pi, k\pi + \frac{\pi}{2}, k\pi - \frac{\pi}{4}\}$ ب) $1 - \sqrt{\sin x} \geq 0$ $\sqrt{\sin x} \leq 1 \Rightarrow \sin x \leq 1$ $\frac{1}{\sqrt{\sin x}} \geq 1 \Rightarrow \sin x \leq 1$ $D_f = [k\pi - \frac{\pi}{2}, k\pi + \frac{\pi}{2}]$	8
الف) $x - 1 > 0 \Rightarrow x > 1$ $\sqrt{1 - \log_2 x} \geq 0 \Rightarrow 1 - \log_2 x \geq 0 \Rightarrow \log_2 x \leq 1 \Rightarrow x \leq 2$ $D_f = (1, 2]$ ب) $\frac{x^2 - 9}{x^2} \geq 0 \Rightarrow x \in \mathbb{R} \setminus \{0\}$ $D_f = \mathbb{R} \setminus \{0\}$	9
الف) $\frac{x^2 - 1}{x^2 - 1} = 1$ $\frac{x^2 - 1}{x^2 - 1} = 1 \Rightarrow x^2 - 1 \neq 0 \Rightarrow x \neq \pm 1$ $D_f = \mathbb{R} \setminus \{\pm 1\}$ ب) $\frac{x^2 - 1}{x^2 - 1} = 1$ $\frac{x^2 - 1}{x^2 - 1} = 1 \Rightarrow x^2 - 1 \neq 0 \Rightarrow x \neq \pm 1$ $D_f = \mathbb{R} \setminus \{\pm 1\}$	10