

$$y = \sqrt{\frac{x^2 + 1}{x + b}} + a$$

$$Dy = (1, +\infty) \Rightarrow \text{معرى منفرجه}$$

$$\Downarrow$$

$$b = -1 \checkmark$$

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الف) $y = \sqrt{x^2 - x}$

$$y = \sqrt{x(x-1)(x+1)}$$

$$\frac{-1}{-1} + \frac{0}{+1} + \frac{1}{-1} +$$

$$D_f = [-1, 0] \cup [1, +\infty) \checkmark$$

بـ) $y = \frac{1}{\sqrt{|x| - 1}}$

$$|x| \neq 1 \Rightarrow x \neq \pm 1$$

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

$$D_f = (-\infty, -1) \cup (1, +\infty) \checkmark$$

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الف) $y = \sqrt{\frac{1}{|x| - [x]}}$

$$|x| - [x] \neq 0$$

$$|x| \neq [x] \Rightarrow x \neq W$$

$$\Rightarrow D_f = \mathbb{R} - \{W\} \checkmark$$

بـ) $\sqrt{x} + \sqrt{y} = 9$

$$\max \sqrt{x} = 9 \Rightarrow x = 81$$

$$\min \sqrt{x} = 0 \Rightarrow x = 0$$

$$D_f = [0, 81] \checkmark$$

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$$y = \frac{1}{\sqrt{\left(x - \frac{1}{2}\right)^2 - \left(x + \frac{3}{2}\right)}} = \frac{1}{\sqrt{x\left(x - \frac{1}{2}\right) + 1}}$$

$$x\left(x - \frac{1}{2}\right) > 0$$

$$\left(x - \frac{1}{2}\right) > -1$$

$$\Rightarrow x - \frac{1}{2} > 0 \Rightarrow x > \frac{1}{2} \checkmark$$

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$$y = \sqrt{1 - \log_2(x-a)}$$

$$\Rightarrow 1 - \log_2(x-a) \geq 0$$

$$\log_2(x-a) \leq 1$$

$$x - a > 0$$

$$x > a$$

$$x > \frac{9}{2}$$

$$x - a \leq 1$$

$$x \leq 1 + a$$

$$x \leq \frac{10 + a}{2}$$

$$\Rightarrow \frac{9}{2} < x \leq \frac{10 + a}{2}$$

$$c - b = \frac{10 + a}{2} - \frac{9}{2} = \frac{1 + a}{2} = 5 \checkmark$$

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الف) $y^3 - 2y^2 - 2y - 1 = 0$ $\cos y = y \cos 2$ ج) $\frac{2}{y} = \sqrt{2}$ $y = 2\sqrt{2}$ $y^3 = 2y^2 + 2y + 1$ $\frac{\pi}{2} \cos y = y \cos \frac{\pi}{4}$ $(\sqrt{2} - \sqrt{y})^2 = 0$ $\Rightarrow y_1 = y_2 = 1$ $\Rightarrow \cos y = 0$ $\sqrt{2} - \sqrt{y} = 0$ $y_1 = 2\sqrt{2}, y_2 = -1$ $y = \frac{\pi}{4}$ $\sqrt{2} = \sqrt{y}$ $y = 2$ $y_3 = 2\sqrt{2}, y_4 = 0$ $\checkmark$ $\checkmark$ $\checkmark$ $\checkmark$ تقریباً	$y^3 + 2y^2 - y - 2 = 0$ $2(y^2 + y) = y^3 + 2y$ $2 = \frac{y^3 + 2y}{y^2 + y} = \frac{y(y^2 + 2)}{y^2 + y}$ $2 = y$ $\checkmark$ $\checkmark$	۱
الف) $y + 2^y = 2$ $y - 2^y = -2$ $\begin{cases} -y & y > 0 \\ -2^y & y < 0 \end{cases} \Rightarrow \begin{cases} y = 2^y \\ y = 2^y \end{cases}$ $\checkmark$ $\times$ $\checkmark$ $\checkmark$ $\checkmark$ 	$[y] + [2] = 1$ $\xrightarrow{\text{شان نقض}} x = 0 \Rightarrow y = [1 و 2]$ $\checkmark$ $\checkmark$ $\otimes$	۲
$f(x) = \begin{cases} 2x^2 - b & x-1 \geq 2 \\ a + 2x & 0 \leq x \leq 3 \end{cases}$ $\begin{matrix} x \geq 3 \\ x < 1 \end{matrix}$ $\begin{matrix} x \geq 3 \\ x < -1 \end{matrix}$ $f(3) = 2 \times 3^2 - b = 2 \times 9 + a$ $a - b = 4 + a \Rightarrow a + b = 12$ $\checkmark$	$D_f = [b, a] \Rightarrow 1 \leq r = a و b$ $\frac{1}{2} = \frac{a-1}{2} \Rightarrow -b = a + b$ $a = 2b$ $a + b = 1 - 1 = 0$ $\checkmark$ $\frac{1}{2} = \frac{a-1}{2} \Rightarrow -1 = b$ $\checkmark$ $\checkmark$	۳
$f(x) = \sqrt{a \cdot bx - 2^x}$ صورتی: $-\frac{b}{a} = -\frac{b}{1} \Rightarrow -b = a + b$ $a = 2b$ مخرجی: $-\frac{a}{a} = -\frac{a}{1} \Rightarrow -a = a + b$ $a = 2b$ $\frac{1}{2} = \frac{a-1}{2} \Rightarrow -1 = b$ $\checkmark$ $\checkmark$	$a = 0 \Leftrightarrow$ دارد $\frac{2}{+1} =$ $b < 0 \Leftrightarrow$	۴
$y = \frac{2}{\sqrt{ax^2 + bx + c}}$ $\frac{2}{a} + c - 2 b = 2$ $-2b + 2b = b$ $\checkmark$ $\checkmark$ $\checkmark$ $\checkmark$	$D_f = (-\infty, 0)$ $a = 0 \Leftrightarrow$ $bx^2 + c = 0$ $2b + c = 0 \Rightarrow c = -2b$	۵