

نام و نام خانوادگی نام کوچک پاسخنامه تشریحی تکلیف شماره کلاس ریاضی دوم دبیرستان

الف) $y^2 - 2x^2 - 2x - 1 = 0 \Rightarrow y^2 = 2x^2 + 2x + 1$
 $\begin{cases} (x_1, y_1) \\ (x_2, y_2) \end{cases} \xrightarrow{x_1 = x_2} y_1^2 = y_2^2 \Rightarrow y_1 = y_2$ تابع است
 ب) $x \cos y = y \cos x \Rightarrow x = k\pi + \frac{\pi}{4}, y = k\pi + \frac{\pi}{4} \Rightarrow 0 = 0$
 $\hookrightarrow x = \frac{\pi}{4}, y = \frac{\pi}{4}$
 $x = \frac{\pi}{4}, y = \frac{5\pi}{4}$
 ج) $\frac{x+y}{2} = \sqrt{xy} \Rightarrow x+y = 2\sqrt{xy} \Rightarrow x^2 + y^2 + 2xy - 4xy = 0$
 $\Rightarrow x^2 + y^2 - 2xy = 0 \Rightarrow (x-y)^2 = 0 \Rightarrow x = y$
 $\Rightarrow x = y$ تابع است


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$2 \leq |x-1| \rightarrow 2 \leq x-1 \Rightarrow 3 \leq x$
 $\hookrightarrow x-1 \leq -2 \Rightarrow x \leq -1$
 $\Rightarrow x = -1 \rightarrow 2-b = a-2 \Rightarrow a+b=4$
 تابع است
 لا برابر $\rightarrow$ برابر

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$f(x) = \sqrt{-x^2 - bx + a} \Rightarrow$ دامنه تابع $\Rightarrow [b, a] \Rightarrow a, b =$ ریشه ها
 سین و کسین است
 $S = a+b = -b \Rightarrow a = -2b$
 $P = ab = -a \Rightarrow b = -1$
 $\Rightarrow a = 2$
 $\Rightarrow a+b = 2-1 = 1$

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$y = \frac{2}{\sqrt{ax^2 + bx + c}}, D_f = (-\infty, 2) \Rightarrow a = 0$
 $bx+c > 0 \rightarrow bx > -c \xrightarrow{b>0} x > -\frac{c}{b}$
 $\xrightarrow{b<0} x < -\frac{c}{b} \vee \Rightarrow -\frac{c}{b} = 2 \Rightarrow c = -2b$
 $\hookrightarrow |b| = -b$
 $\Rightarrow 2a+c-2|b| = 2x_0 + (-2b) - 2(-b) = -2b + 2b = 0$

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الف) $f(x) = \sqrt{\frac{1}{|x|-5}}$ $\rightarrow$ معنی ندارد
 $x \in \mathbb{R} - \mathbb{Z} \rightarrow 0$ صحیح است
 $x \in \mathbb{Z} \xrightarrow{x \geq 0} x-x=0$ صحیح است
 $\xrightarrow{x < 0} -x-x = -2x$
 ب) $f(x) = \sqrt{x} + \sqrt{y} = 9$
 $\Rightarrow \sqrt{x} \geq 0, \sqrt{y} \geq 0 \Rightarrow x \geq 0$
 $\Rightarrow \sqrt{y} = 9 - \sqrt{x} \Rightarrow \sqrt{y} \geq 0 \Rightarrow 9 - \sqrt{x} \geq 0 \Rightarrow \sqrt{x} \leq 9 \Rightarrow x \leq 81$
 $\Rightarrow D_f = [0, 81]$

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الف) $f(x) = \sqrt[n]{\log x}$ $\log a \rightarrow a > 0$ $\log b \rightarrow b > 0, b \neq 1$ $\log x \rightarrow x > 0, x \neq 1$ $\log x \geq 0 \Rightarrow \log x \geq 0$ $\frac{1}{x} < x < 1 \rightarrow x-1 < 0 \rightarrow x < \frac{1}{x} \rightarrow \frac{1}{x} < x < \frac{1}{x}$ $1 < x \rightarrow x-1 > 0 \rightarrow x > \frac{1}{x} \rightarrow 1 < x$ $D_f: \left(\frac{1}{x}, \frac{1}{x}\right] \cup (1, +\infty)$	ب) $f(x) = \log \frac{1}{4 + \sqrt{ x } - x } = \log \frac{1}{-(\sqrt{ x } - 2)(\sqrt{ x } + 2)}$ $\sqrt{ x } \Rightarrow x \geq 0$ $\Rightarrow \frac{1}{-(\sqrt{ x } - 2)(\sqrt{ x } + 2)} > 0$ $\hookrightarrow x = \pm 9$ $\Rightarrow \frac{-9}{-9} + \frac{9}{9} = 0 \Rightarrow D_f = (-9, +9)$
$y = \sqrt{\frac{x+2}{x+b}} + a \Rightarrow y = \sqrt{\frac{x+2+a+b}{x+b}} = \sqrt{\frac{(x+a)x+(x+b)}{x+b}}$ $x < x \Rightarrow x+a = 0, x+b > 0$ $a = -2$ $\frac{-b+2}{b-2}$ $\Rightarrow y = \sqrt{\frac{2}{x-2}}$ ✓	✓
$f(x) = \begin{cases} x-1 & x > 2 \\ x+2 & x < 2 \end{cases}$ $\hookrightarrow y = \sqrt{f(x)-x+1} = \sqrt{x-x-x+1} = \sqrt{x} \Rightarrow x > 0 \Rightarrow x > 2$ $\hookrightarrow y = \sqrt{f(x)-x+1} = \sqrt{x+2-x+1} = \sqrt{x+3} \Rightarrow x+3 > 0 \Rightarrow x > -3 \Rightarrow -\frac{4}{x} < x < 2$ $\{x \mid -\frac{4}{x} < x \Rightarrow D = [-\frac{4}{x}, +\infty)$	1
$y = \frac{x^2 + 2x^2 + 4x^2 + 11x^2}{(x^2 + x + 1)^2}$ $\xrightarrow{\text{Cose}} x^2(1x^2 + 12x^2 + 4x + 1) = x^2(x+1)^2$ $\xrightarrow{\text{Ejao}} (x^2 + x + 1)^2 = (x+1)^2 = (x+1)^2$ $\Rightarrow y = \frac{x^2(x+1)^2}{(x+1)^4} = \frac{x^2}{x+1}$ $x+1 \neq 0 \Rightarrow x \neq -\frac{1}{x} \Rightarrow D_f = \mathbb{R} - \{-\frac{1}{x}\}$	9
$y = \sqrt{1 - \log(x-a)}$ $\rightarrow x-a > 0 \Rightarrow x > a \Rightarrow x > \frac{a}{x}$ $\hookrightarrow 1 - \log(x-a) > 0$ $1 > \log(x-a)$ $x-a \leq 1$ $x \leq \frac{1+a}{x}$	$\frac{1}{x} < x \leq \frac{1+a}{x}$ $b < x \leq c$ $\Rightarrow b = \frac{a}{x}, c = \frac{1+a}{x} = \frac{1}{x} + \frac{a}{x}$ $\Rightarrow c-b = \boxed{1}$ 10