

نکته: $\frac{1}{0}$ نامعین

ناترین: چرا معین دوم دهنده A

1, 2, 3

$$y = \sqrt{x f(x)}$$

$x \geq 0$

$$x f(x) \geq 0$$

	-a	0	a	
x	-	0	+	+
f(x)	+	0	-	+
$x f(x)$	-	0	-	+

$$D_f = [-a, 0] \cup [a, \infty)$$

سوال 1

$$y = \sqrt{\frac{-x}{f(x)}}$$

$$\frac{-x}{f(x)} \geq 0 \rightarrow \begin{cases} -x \geq 0 \rightarrow x \leq 0 \\ f(x) > 0 \end{cases}$$

	-a	0	a	
-x	+	0	-	-
f(x)	-	0	+	+
$\frac{-x}{f(x)}$	-	0	-	-

سوال 2

$$D_f = (-\infty, 0) \cup (0, \infty)$$

$$f(x) - 2f(2) = x^2 - 2x + 2$$

$$f(-2) = ?$$

$$x=2 \rightarrow -f(2) = 2 - 4 + 2 \rightarrow f(2) = -2$$

$$x=-2 \rightarrow f(-2) + 2 = 4 - 4 + 2 \rightarrow f(-2) = 1$$

سوال 3

$$f(x) = \begin{cases} x - \sqrt{x+2} & x \geq 2 \\ x + 2 & x < 2 \end{cases}$$

$$\begin{aligned} x=2 &\rightarrow 2 \\ x=2 &\rightarrow 4 \\ x=1 &\rightarrow 3 \end{aligned}$$

سوال 4

$$f(f(a)) + f(f(1)) = ?$$

$$a + 1 = 9$$

$$a - b = ? \rightarrow a = 1$$

$$\begin{cases} f(x+1) - f(x) = 4x+5, & f(x) = ax^2 + bx + c \\ f(x) - f(x+1) = 4x+5 \end{cases}$$

$$f(x+1) - f(x) = 12x+1$$

$$a(x+1)^2 + b(x+1) + c - (ax^2 + bx + c) = 12x+1$$

$$2ax + a + b = 12x+1$$

$$2a = 12 \rightarrow a = 6$$

$$a + b = 1 \rightarrow 6 + b = 1 \rightarrow b = -5$$

سوال 5

$$f(x) = \frac{x^2 + 4x + 4}{x^2 + 2x + 1} = \frac{(x+2)^2}{(x+1)^2}$$

$$f(\sqrt{x}-1) = ?$$

سوال 6

$$f(x - \frac{1}{x}) = \frac{x^2 + 1}{x^2}$$

$$x - \frac{1}{x} = -2 \rightarrow x^2 - \frac{1}{x} + 2 = 0 \rightarrow x^2 + \frac{1}{x} = -2$$

سوال 7: چرا این است که عبارت را در مربع کامل و +2 می کنند.

سوال 8

سوال ٩

$$\text{الف) } \frac{f}{g} = \left\{ \left(0, \frac{1}{\sqrt{2}}\right), \left(1, -\frac{1}{\sqrt{2}}\right), (2, 0) \right\}$$

$$g(x) = \sqrt{1-x^2} \text{ , } f(x) = \left\{ \left(\frac{0}{\sqrt{2}}, \frac{0}{\sqrt{2}}\right), \left(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right), \left(\frac{2}{\sqrt{2}}, \frac{2}{\sqrt{2}}\right), \left(\frac{3}{\sqrt{2}}, \frac{3}{\sqrt{2}}\right) \right\}$$

$$1-x^2 \geq 0$$

$$x^2 \leq 1$$

$$-1 \leq x \leq 1 \rightarrow x = -1, -\frac{1}{2}, 0, \frac{1}{2}, 1$$

$$g(x) = \left\{ (-1, 0), (-\frac{1}{2}, \frac{\sqrt{3}}{2}), (0, 1), (\frac{1}{2}, \frac{\sqrt{3}}{2}), (1, 0) \right\}$$

$$x=0 \rightarrow \frac{f}{g} = \frac{1}{\sqrt{2}} \rightarrow \left(0, \frac{1}{\sqrt{2}}\right)$$

$$x=1 \rightarrow \frac{f}{g} = \frac{-1}{\sqrt{2}} \rightarrow \left(1, -\frac{1}{\sqrt{2}}\right)$$

$$x=2 \rightarrow \frac{0}{\sqrt{2}} = 0 \rightarrow (2, 0)$$

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$$\text{ب) } \frac{g}{f} = \left\{ \left(0, \frac{1}{\sqrt{2}}\right), \left(1, -\frac{1}{\sqrt{2}}\right) \right\}$$

$$x=0 \rightarrow \frac{1}{\sqrt{2}} \rightarrow \left(0, \frac{1}{\sqrt{2}}\right)$$

$$x=1 \rightarrow \frac{-1}{\sqrt{2}} \rightarrow \left(1, -\frac{1}{\sqrt{2}}\right)$$

$$x=2 \rightarrow \frac{0}{\sqrt{2}} \rightarrow (2, 0)$$

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$$f(x) = \left\{ (2, 1), (3, 4), (-5, 2), (1, 2) \right\}$$

سوال ٩

$$\text{الف) } x f(x) = \left\{ (2, 2), (3, 12), (-5, 10), (1, 2) \right\}$$

$$\text{ب) } f(x) + 1 = \left\{ (2, 3), (3, 5), (-5, 3), (1, 3) \right\}$$

$$\text{ج) } x f^2(x) + 1 = \left\{ (2, 5), (3, 13), (-5, 11), (1, 5) \right\}$$

$$\text{د) } f(x) = \left\{ (2, 1), (3, 4), (-5, 2), (1, 2) \right\}$$

$$g(x) = \left\{ (0, 0), \left(\frac{1}{2}, 1\right), (-1, 4), (-2, 9), (3, 16) \right\}$$

$$f(x) = \left\{ \left(\frac{1}{2}, 3\right), (0, 2), (1, 1), (2, 2) \right\}$$

سوال ١٠

$$\text{الف) } f \cdot g = \left\{ (1, 4), (2, 2), (3, 2) \right\}$$

$$\text{ب) } \frac{x f}{g} = \left\{ \frac{x f}{g} = \left\{ \left(\frac{1}{2}, 6\right), \left(\frac{1}{2}, 2\right), (3, 2) \right\} \right\}$$

$$x=1 \rightarrow \frac{1}{0} \times$$

$$x=2 \rightarrow 4$$

$$x=3 \rightarrow -2$$

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