

19,70

نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره ... کلاس ...

$f(x) \in \sqrt{1-x^2} \rightarrow Df \in [-1, 1]$
 $Dg \in \{-1, 0, 1\} \Rightarrow Df \cap Dg \in \{-1, 0, 1\}$

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

$M = f \circ g - g \circ f \Rightarrow R_M = \{f, 0, f\}$

$\{(1, 2), (0, 0), (1, 2)\}$

$x = -1 \rightarrow f(1) - f(0) \leq 2$
 $x = 0 \rightarrow f(1) - f(1) \leq 0$
 $x = 1 \rightarrow f(2) - f(0) \leq 2$

$f + 0 + f \leq 11$

5

$f(x) = 2x - 1$

$x \in \mathbb{R} \rightarrow (2x - 1) - 1 \leq 0$

$x \in \mathbb{R} \rightarrow 2x - 2 \leq 0$

$g(x) = \frac{1}{x}x + 2$

$x \in \mathbb{R} \rightarrow 2$

$x \in \mathbb{R} \rightarrow 2$

$R_f \in [\frac{1}{2}, +\infty)$

$R_f \cup R_g = (-\infty, 2] \cup [\frac{1}{2}, +\infty)$

2

$-\frac{x^2}{2} + x + 2 > \frac{x}{2} \rightarrow -x^2 + 2x + 4 > x \rightarrow -x^2 + x + 4 > 0$

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

$2 \leq \sqrt{\frac{3 - (-1)}{2}} = \sqrt{b - a}$

$(-1, 3)$

3

$y = |x - 1| + |x - 2| + |2x - 3|$

$1 \quad 2 \quad 3$

$-x + 1 - x + 2 - 2x + 3$	$x - 1 - x + 2 - 2x + 3$	$x - 1 + x - 2 - 2x + 3$	$x - 1 + x - 2 + 2x - 3$
$-4x + 6$	$-2x + 4$	$-x + 0$	$3x - 6$
1	2	3	4

$R_y \in [2, +\infty)$

4

$y = |x| - 2|x + 1|$

$0 \quad -1$

$-x + 2x + 2$	$x - 2x - 2$	$x - 2x - 2$
$x + 2$	$-x - 2$	$-x - 2$
1	0	1

$R_y \in (-\infty, 1]$

5

$$m=f \rightarrow \frac{a+\Delta u+f}{u+1} = a+f, \frac{a+1}{u+1}$$

برای جانشینی

در تابع IR

1, NO

$$y \leq \frac{x^2 + \Delta x + m}{x+1} \rightarrow yx + y \leq x^2 + \Delta x + m$$

$$yx + y - x^2 - \Delta x - m \leq 0$$

$$x^2 + (\Delta - y)x + (m - y) \leq 0$$

$$x = \frac{y - \Delta \pm \sqrt{(\Delta - y)^2 - 4(m - y)}}{2}$$

$$m \in \{1, 2, 5\}$$

$$m \leq 5 \Rightarrow m \in \mathbb{N}$$

جوابهای:

$$m \in \{1, 2, 5\}$$

(مقدار طبیعی)

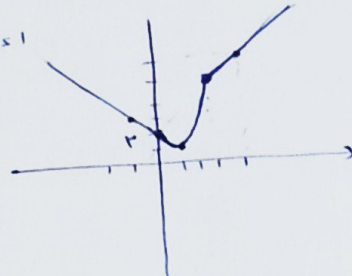
$$m \leq 5$$

$$m \in \mathbb{N}$$

$$(\Delta - y)^2 - 4(m - y) \geq 0 \Rightarrow y^2 + 2\Delta - 4y - 4m + 4y \geq 0$$

$$\Delta \leq 0 \Rightarrow 2\Delta - 4(m - y) \leq 0 \Rightarrow 2\Delta - 4m + 4y \leq 0$$

$$f(x) = \begin{cases} x+2 & x > 2 \\ x^2 - 2x + 2 & 0 \leq x \leq 2 \\ |x| + 2 & x < 0 \end{cases}$$



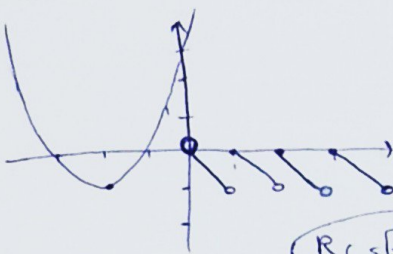
$$R_f = [1, +\infty)$$

5

Y

$$f(x) = \begin{cases} x^2 + 2x + 2 & x \leq 0 \\ [2x] - 2x & x > 0 \end{cases}$$

$$x \in \mathbb{Z} \rightarrow [x] - x \rightarrow R = (-1, 0]$$



$$R_f = [-1, +\infty)$$

5

A

$$x^2 + 2x + 2 = (x+1)(x+2) \Rightarrow \frac{-b}{2a} = -\frac{1}{1} = -1 \Rightarrow R = [-1, +\infty) \Rightarrow R_{y1} \cup R_{y2}$$

$$y \leq a+1 - \sqrt{2x+2}$$

$$2x+2 \geq 0 \rightarrow x \geq -\frac{2}{2} \rightarrow D_y = [-1, +\infty)$$

$$b = \sqrt{2x+2}$$

علامت رادیکال مثبت است پس بیشترین مقدار برابر با صفر است.

$$a+1 - \sqrt{-\frac{2}{2}x + 2} = a$$

$$a+1 \leq a \Rightarrow a \leq -1$$

$$ab = -2$$

$$b \leq -\frac{2}{a}$$

5

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$$f(x) = 2\sqrt{x+1} + 2\sqrt{1-x} \Rightarrow D_f = [-1, 1] = D_g$$

$$\begin{cases} x+1 \geq 0 \rightarrow x \geq -1 \\ x-1 \geq 0 \rightarrow x \leq 1 \end{cases} \Rightarrow D_f \cap D_g = [-1, 1]$$

$$f(x) + g(x) = 2\sqrt{x+1} + 2\sqrt{1-x} \leq 2(\sqrt{x+1} + \sqrt{1-x}) \rightarrow g(x) = 2\sqrt{x+1} + 2\sqrt{1-x} - f(x)$$

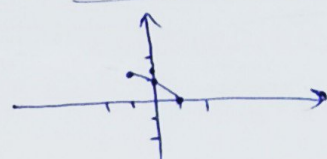
$$-2g(x) = -4\sqrt{x+1} + (-2\sqrt{1-x}) + 2f(x)$$

$$f(x) - 2g(x) = 4\sqrt{x+1} + (-2\sqrt{1-x}) + 2f(x)$$

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$$y = \frac{f(x)}{y} - \frac{g(x)}{x} = \frac{f(x) - 2g(x)}{y} = \frac{-4\sqrt{x+1} - 2\sqrt{1-x} + 4\sqrt{x+1} + 2\sqrt{1-x}}{y} = \frac{0}{y} = 0$$

$$D_y \subseteq D_g \cap D_f = [-1, 1]$$



$$\begin{vmatrix} 1 & -1 & 0 \\ 0 & 1 & 1 \\ 0 & 1 & 1 \end{vmatrix}$$

$$\sqrt{1-x}$$