

۱۹, ۲۵

نام و نام خانوادگی کلاس پاسخنامه تشریحی تکلیف شماره ۶

$$(x-1)^3 + 1 = y \Rightarrow (x-1)^3 = y-1 \Rightarrow x-1 = \sqrt[3]{y-1} \Rightarrow x = \sqrt[3]{y-1} + 1$$

$$\Rightarrow R_f = \mathbb{R} \quad \checkmark$$

الف)

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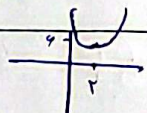
$$y = \frac{1}{x^2 - 2x} \Rightarrow y = \frac{1}{x^2 - 2x + 1 - 1} \Rightarrow y = \frac{1}{(x-1)^2 - 1} \Rightarrow y((x-1)^2 - 1) = 1$$

ب)

$$\Rightarrow (x-1)^2 = \frac{1+y}{y} \Rightarrow x-1 = \sqrt{\frac{1+y}{y}} \Rightarrow x = \sqrt{\frac{1+y}{y}} + 1 \Rightarrow R_f = \frac{-1}{+4-4} \Rightarrow R_f = (-\infty, -1] \cup (0, +\infty)$$

$$x_{\min} = -\frac{b}{2a}$$

$$y = x^2 - 4x + 1 \quad \begin{cases} x_{\min} = 2 \\ y_{\min} = -3 \end{cases}$$

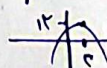


$$R_f = [1, +\infty) \quad \checkmark$$

الف)

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$$y = -x^2 + 4x + 2 \quad \begin{cases} x_{\max} = 2 \\ y_{\max} = 12 \end{cases}$$

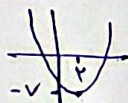


$$R_f = (-\infty, 12] \quad \checkmark$$

ب)

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$$y = \sqrt{x^2 - 4x - 2} \quad \begin{cases} x_{\min} = 2 \\ y_{\min} = -1 \end{cases}$$



$$R_f = (-1, +\infty) \xrightarrow{\text{رادیكال}} [0, +\infty) \quad \checkmark$$

ج)

$$y = \sqrt{-x^2 + 4x} \quad \begin{cases} x_{\max} = 2 \\ y_{\max} = 2 \end{cases}$$



$$R_f = (-\infty, 2] \xrightarrow{\text{رادیكال}} [0, 2] \quad \checkmark$$

د)

$$R_f = \mathbb{R} \quad \checkmark \Rightarrow \text{فونکشن برعکس قابل فرداست و محدودیت هم ندارد}$$

الف)

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$$R_f = \mathbb{R} \quad \checkmark$$

$$R_f = \mathbb{R} \xrightarrow{\text{رادیكال}} [0, +\infty) \quad \checkmark$$

ب)

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$$R_f = [0, +\infty) \quad \checkmark \Rightarrow \text{فونکشن قابل فرداست}$$

ب)

$$y = \frac{2x+1}{x-2} \Rightarrow R_f = \mathbb{R} - \left\{\frac{1}{2}\right\} \Rightarrow R_f = \mathbb{R} - \{2\} \quad \checkmark$$

الف)

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$$y = \frac{2x+1}{x+1} \Rightarrow R_f = \mathbb{R} - \left\{\frac{1}{2}\right\} \Rightarrow R_f = \mathbb{R} - \{2\} \quad \checkmark$$

ب)

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$$y = \sqrt{\frac{2x+1}{x+1}} \Rightarrow \text{رادیكال} \quad R_f = \mathbb{R} - \left\{\frac{1}{2}\right\} \Rightarrow R_f = \mathbb{R} - \{2\} \xrightarrow{\text{رادیكال}} [0, +\infty) - \{\sqrt{2}\} \quad \checkmark$$

الف)

۱, ۷, ۵

وقت!

$$y = \sqrt{\frac{2x+1}{1-x}} \Rightarrow \text{رادیكال} \quad R_f = \mathbb{R} - \left\{\frac{1}{2}\right\} \Rightarrow R_f = \mathbb{R} - \{2\} \xrightarrow{\text{رادیكال}} [0, +\infty) - \{\sqrt{2}\} \quad \checkmark$$

ب)

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الف (2) 6

$$\frac{2x-3}{x+1} \begin{cases} \text{موجب قائم: } x+1=0 \Rightarrow x=-1 \\ \text{موجب اثنى: } \frac{a}{c} = \frac{3}{2} \end{cases} \Rightarrow$$

ب (1)

$$\frac{2x-1}{x+2} \begin{cases} \text{موجب قائم: } x=-2 \\ \text{موجب اثنى: } \frac{a}{c} = \frac{1}{2} \end{cases} \Rightarrow$$

الف (2) 7

$$\sin x + \frac{1}{\sin x} \geq a + \frac{1}{a} \Rightarrow R_f = (-\infty, -2] \cup [2, +\infty)$$

ب (1) $\frac{x^2+1}{x^3} = x^2 + \frac{1}{x^3} \Rightarrow R_f = (-\infty, -2] \cup [2, +\infty)$

ج (2) $\frac{\sqrt{x^2+1}}{\sqrt{x}} = \sqrt{x} + \frac{1}{\sqrt{x}} \Rightarrow R_f = (-\infty, -2] \cup [2, +\infty)$

د (1) $\sqrt{x} + \frac{1}{\sqrt{x}} \Rightarrow R_f = [2, +\infty)$

الف (2) 8

$$x^2+2 + \frac{1}{x^2+2} - 3 \Rightarrow R_f = [\frac{1}{3}, +\infty)$$

ب (1) $\frac{x^2+4+1}{\sqrt{x^2+4}} = \sqrt{x^2+4} + \frac{1}{\sqrt{x^2+4}} \Rightarrow R_f = [\frac{5}{2}, +\infty)$

الف (2) 9

$$g = |x-3| + |2x+4|$$

Graphs of the absolute value functions and their sum are shown. The sum function has a V-shape with a minimum at x = -2.

الف (2) 10

بردها؟

$$R = [3, +\infty)$$

$$R = [-2, +\infty)$$