

حل می یاریم: A

۱۹,۵

باستفاده از تکلیف شماره ۶۰

« باسم تعالی »

نام و نام خانوادگی: علی ربانی

الف) $y = x^3 - x^2 + x - 1 + 1$

۲ -

$y = (x-1)^3 + 1 \quad (x-1)^3 = y-1$

$x-1 = \sqrt[3]{y-1} \quad x = \sqrt[3]{y-1} + 1 \quad R_f = \mathbb{R} \checkmark$

ب) $y = \frac{1}{x^2 - x}$

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

$x = \sqrt{\frac{y+1}{y}} + 1 \quad \frac{-1}{+4} = \frac{0}{-4} + \frac{1}{4}$

$R_f = (-\infty, -1] \cup (0, +\infty) \checkmark$

الف) $y = x^2 - 4x + 1$

$\frac{x}{2} = 2$

$R_f = [4, +\infty) \checkmark$

ج) $y = \sqrt{x^2 - 4x + 5}$ ۲ -

ب) $y = -x^2 + 4x + 3$

$\frac{x}{2} = 2$

$R_f = (-\infty, 4] \checkmark$

$R_f = [0, +\infty) \checkmark$

د) $y = \sqrt{4x - x^2}$

$\frac{x}{2} = 2$

$R_f = \sqrt{(-\infty, 4]} = [0, 4] \checkmark$



الف) $y = x^2 - 6x^2 + 2x + 1 \rightarrow R_f = \mathbb{R} \checkmark$

۳ - ۱,۵

ب) $y = x^4 - 4x^2 + 3x + 2 \rightarrow R_f = \mathbb{R} \checkmark$

ج) $y = \sqrt{x^4 - 4x^2 + 5x + 1} \rightarrow R_f = [0, +\infty) \checkmark$

د) $y = (x^5 - 4x^2 + 2x + 1) \rightarrow \mathbb{R}' = \mathbb{R} \Rightarrow R_f = \mathbb{R} \checkmark [0, +\infty)$
حفظ اعداد + صبر

الف) $y = \frac{x+1}{x-2} \quad R_f = \mathbb{R} - \{2\} \checkmark$

ب) $\frac{x+1}{x-1} \quad R_f = \mathbb{R} - \{1\} \checkmark$ ۲ -

الف) $y = \sqrt{\frac{x+4}{x+1}}$

$R_f = [0, +\infty) - \{\sqrt{2}\} \checkmark$

۵ - ۲

ب) $y = \sqrt{\frac{x+1}{x-2}}$

$R_f = \sqrt{\mathbb{R} - \{-2\}} = [0, +\infty) \checkmark$

$\sqrt{\mathbb{R} - \{-2\}} = [0, +\infty)$

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

$x^2 y^2 - 2xy^2 = x^2 + 1$

$x^2 + 1 + 2xy^2 = x^2 y^2$

$2(x + y^2) = x^2 y^2 - 1$

$x = \frac{x^2 y^2 - 1}{2(x + y^2)} \rightarrow R - \text{مستثنی}$

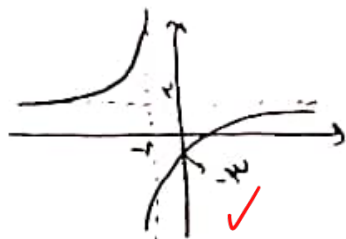
$$الف) y = \frac{x^2 - 1}{x + 1}$$

$$مجال تعریف = [-1]$$

$$مجاہب افق = 1$$

$$مجاہب افق = 0$$

$$مجاہب قائم = 1$$



$$ب) y = \frac{x^2 - 1}{x^2 + 1}$$

$$مجاہب قائم = 1$$

$$مجاہب افق = 1$$



$$الف) y = \sin x + \frac{1}{\sin x} \rightarrow R_f = (-\infty, -1] \cup [1, +\infty)$$

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

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

$$د) y = \sqrt{x} + \frac{1}{\sqrt{x}} \rightarrow R_f = [1, +\infty)$$

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

نقارہ مثبت
بہا تعریف متعارف = 0

جہاں کچھ نقارہ مثبت

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

کمری مقدار

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

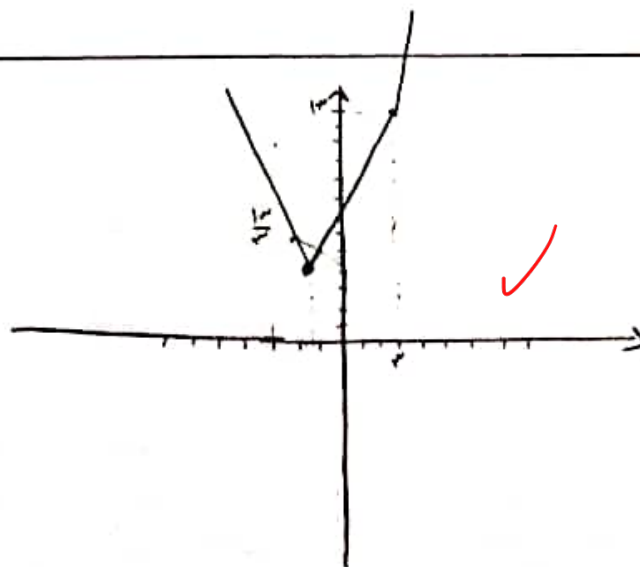
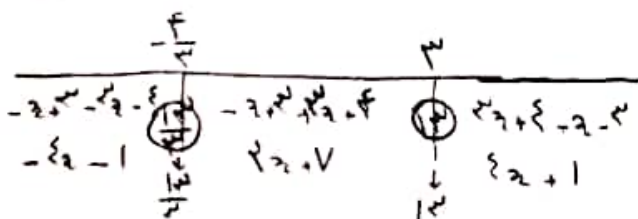
$$ب) y = \frac{x^2 + 1}{\sqrt{x^2 + 1}} = \frac{\sqrt{x^2 + 1}}{\sqrt{x^2 + 1}} + \frac{1}{\sqrt{x^2 + 1}} = \sqrt{x^2 + 1} + \frac{1}{\sqrt{x^2 + 1}}$$

نقارہ مثبت
کمری مقدار = 0

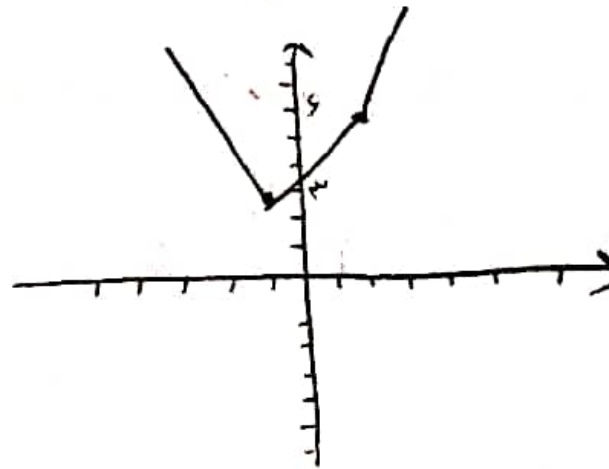
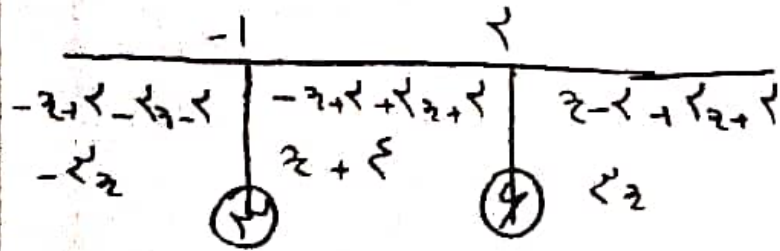
$$\rightarrow R_f = [\frac{1}{2}, +\infty)$$

$$\sqrt{x} + \frac{1}{\sqrt{x}} = \frac{1}{x}$$

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



الف) $y = |x-2| + |x+2|$

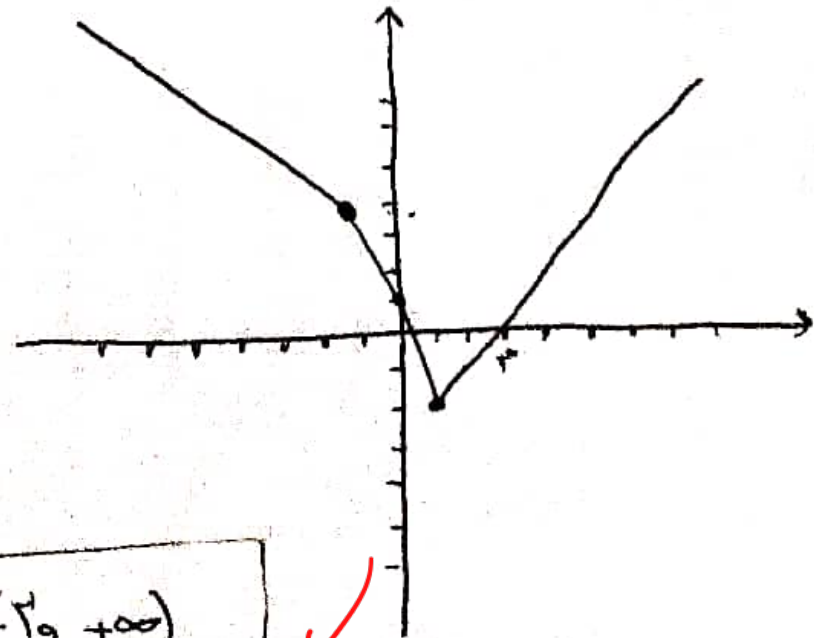
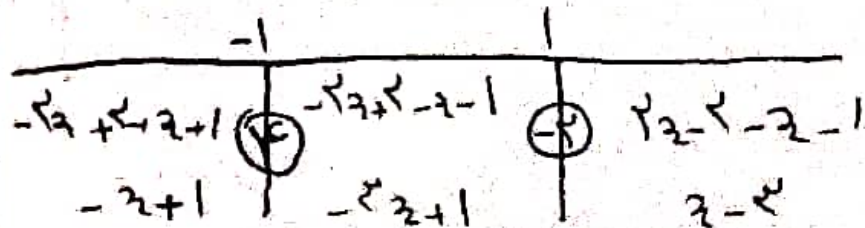


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(4)

$R_f = [2, +\infty)$ ✓

ب) $y = |x-2| - |x+1|$



$R_f = [-1, +\infty)$ ✓