نام و نام خانوادگی ...حسین صالحی.......... پاسخنامه تشریحی تکلیف شماره ..۹..... کلاس ....

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الف) $y=x^2-5$ $\quad y+5=x^2$ $\quad x=\sqrt{y+5}$ $\quad y+5\geq 0$, $y\geq -5$ $\quad R_f=[-5,+\infty)$

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

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الف) $y=x^2-4x+6$ $\quad y=x^2-4x+4+2$ $\quad y=(x-2)^2+2$ $\quad (x-2)^2=y-2$ $\quad R_f=[\frac{-21}{4},+\infty)$

$x=\frac{-b\pm\sqrt{\Delta}}{2a}=\frac{-b\pm\sqrt{b^2-4ac}}{2a}=\frac{5\pm\sqrt{25-4(1-y)}}{2}$ $\quad x-2=\sqrt{y-2}$ $\quad y-2\geq 0$, $y\geq 2$ $\quad R_f=[2,+\infty)$

$x=\sqrt{y-2}+2$ $\quad 4y\geq -21$, $21+4y\geq 0$, $y\geq\frac{-21}{4}$ $\quad (-\infty,-1]$

ب) $y=x^2-5x+1$ $\quad x^2-5x+1-y=0$ $\quad \sqrt{25-4+4y}$ $\quad 25-4+4y\geq 0$ $\quad R_f=\cup(1,+\infty)$

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الف) $y=\frac{x^2+3}{x^2-2}$ $\quad yx^2-2y=x^2+3$ $\quad yx^2-x^2=3+2y$ $\quad x^2(y-1)=2y+3$ $\quad x^2=\frac{2y+3}{y-1}$ $\quad x=\sqrt{\frac{2y+3}{y-1}}$

$-\frac{3}{2}$, 1 $\quad (-\infty,-\frac{3}{2}]\cup(1,+\infty)$

ب) $y=\frac{2|x|+1}{|x|-4}$ $\quad y|x|-4y=2|x|+1$ $\quad y|x|-2|x|=4y+1$ $\quad |x|(y-2)=4y+1$ $\quad |x|=\frac{4y+1}{y-2}$ $\quad y_1=-\frac{1}{4}$, $y_2=2$

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$y=\frac{1}{x^2-4x}$ $\quad yx^2-4xy=1$ $\quad yx^2-4xy-1=0$ $\quad yx^2-4yx-1=0$

$x=\frac{-b\pm\sqrt{\Delta}}{2a}=\frac{4y\pm\sqrt{16y^2-(4y)}}{2y}$ $\quad b^2-4ac$

$16y^2+4y\geq 0$

$4y(4y+1)\geq 0$ $\quad -\frac{1}{4}$, 0 $\quad (-\infty,-\frac{1}{4}]\cup[0,+\infty)$

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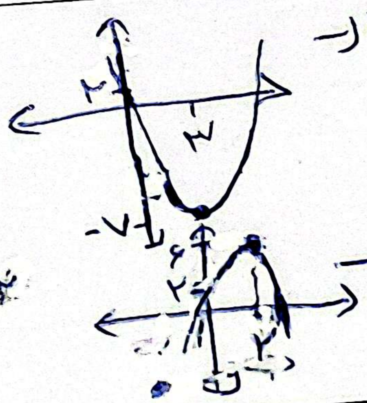
الف) $y=x^2-6x+2$ $\quad \min\left|\frac{-b}{2a}=3\right.$, -7 $\quad \rightarrow R_f=[-7,+\infty)$



ب) $y=-x^2+4x+2$ $\quad \max\left|\frac{-4}{-2}=2\right.$, 6 $\quad \rightarrow R_f=(-\infty,6]$

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الف) $y = \sqrt{x^2 - 4x + 7}$ $\quad \min \left| \frac{-b}{2a} = 2 \right.$ $\quad -7$ $\quad R_f = \sqrt{[-7, +\infty)} = [0, +\infty)$

$R_f =$

ب) $y = \sqrt{-x^2 + 4x + 5}$ $\quad \max \left| \frac{-b}{2a} = \frac{-4}{-2} = 2 \right.$ $\quad -2$ $\quad R_f = \sqrt{(-\infty, 9]}$

$= \phi$

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الف) $y = x^4 + 2x^2 + 2x + 1$ $\quad R_f = \mathbb{R} = (-\infty, +\infty)$

ب) $y = \sqrt{x^4 + 4x^2 + 4x + 1}$ $\quad R_f = \sqrt{\mathbb{R}} = [0, +\infty)$

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الف) $y = \frac{2x + 1}{x - 2}$ $\quad R_f = \mathbb{R} - \{2\}$ $\quad ad \neq bc$ ✓

$ad \neq bc$ ✓

ب) $y = \sqrt{\frac{4x + 1}{x + 2}}$ $\quad R_f = \sqrt{\mathbb{R} - \{4\}} = [0, +\infty) - \{2\}$

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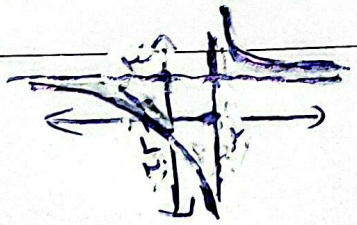
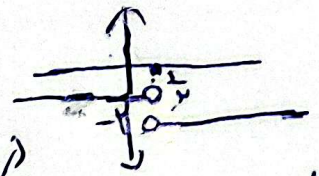
الف) $y = \frac{2x + 1}{x - 2}$



$ad \neq bc$ ✓



ب) $y = \frac{4x - 2}{10 - 2x}$ $\quad y = \frac{4x - 2}{-2x + 10} = -2$ $\quad ad \neq bc$ $\quad x \neq \frac{1}{2}$ $\quad -2x + 10 \neq 0$

$x \neq 5$

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الف) $y = \cos^2 x + \frac{1}{\cos^2 x}$ $\quad \cos^2 x > 0$ $\quad R_f = [2, +\infty)$

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

$(-\infty, \sqrt[3]{-2}] \cup [\sqrt[3]{2}, +\infty)$