نام و نام خانوادگی ...[illegible]... پاسخنامه تشریحی تکلیف شماره ...۹... کلاس دهم تجربی

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الف) $y = x^2 - 5 \rightarrow x^2 = y + 5 \rightarrow x = \pm\sqrt{y+5}$

$y + 5 \geq 0 \rightarrow y \geq -5 \rightarrow R_f = [-5, +\infty)$

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

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الف) $y = x^2 - 4x + 6 \rightarrow y = x^2 - 4x + 4 + 2 \rightarrow y = (x-2)^2 + 2 \rightarrow (x-2)^2 = y - 2$

$x - 2 = \pm\sqrt{y-2}$ $\quad y - 2 \geq 0 \rightarrow y \geq 2 \rightarrow R_f = [2, +\infty)$

ب) $y = x^2 - 5x + 1 \rightarrow y = x^2 - 5x + 1 + \frac{21}{4} - \frac{21}{4} \rightarrow y + \frac{21}{4} = (x - \frac{5}{2})^2$

$x - \frac{5}{2} = \pm\sqrt{y + \frac{21}{4}}$

$y + \frac{21}{4} \geq 0 \rightarrow y \geq -\frac{21}{4} \rightarrow R_f = [-\frac{21}{4}, +\infty)$

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

$x = \pm\sqrt{\frac{2y+3}{y-1}}$ $\quad \frac{2y+3}{y-1} \geq 0$ $\quad 2y + 3 = 0 \rightarrow 2y = -3 \rightarrow y = -\frac{3}{2}$ $\quad y - 1 = 0 \rightarrow y = 1$

$-\frac{3}{2} \quad 1$
$+ \; \phi \; - \; \nexists \; +$

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

ب) $y = \frac{2|x|+1}{|x|-4} \rightarrow y|x| - 4y = 2|x| + 1 \rightarrow y|x| - 2|x| = 4y + 1 \rightarrow |x|(y-2) = 4y + 1 \rightarrow |x| = \frac{4y+1}{y-2}$

$\frac{4y+1}{y-2} \geq 0 \rightarrow$ $\quad -\frac{1}{4} \quad 2$
$+ \; \phi \; - \; \nexists \; +$ $\rightarrow R_f = (-\infty, -\frac{1}{4}] \cup (2, +\infty)$

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$y = \frac{1}{x^2 - 4x} \rightarrow \frac{1}{y} = x^2 - 4x \rightarrow \frac{1}{y} = x^2 - 4x + 4 - 4 \rightarrow \frac{1}{y} = (x-2)^2 - 4$

$\frac{1}{y} + 4 = (x-2)^2 \rightarrow x - 2 = \pm\sqrt{\frac{1}{y} + 4}$ $\quad \frac{1}{y} + 4 \geq 0 \rightarrow \frac{1+4y}{y} \geq 0$ $\quad y \rightarrow -\frac{1}{4}$, $\; y \rightarrow 0$

$4y + 1 = 0 \rightarrow 4y = -1 \rightarrow y = -\frac{1}{4}$ $\quad -\frac{1}{4} \quad 0$
$+ \; \phi \; - \; \nexists \; +$ $\quad R_f = (-\infty, -\frac{1}{4}] \cup (0, +\infty)$

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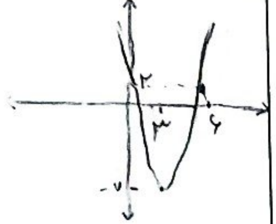
الف) $y = x^2 - 6x + 2$ $\quad ext \begin{cases} \frac{-b}{2a} = \frac{6}{2} = 3 \\ \frac{-\Delta}{4a} = \frac{-28}{4} = -7 \end{cases}$ $\rightarrow R_f = [-7, +\infty)$

$\Delta = b^2 - 4ac$

$\Delta = 36 - 4(1)(2) = 36 - 8$

$= 28$

$\rightarrow y = (x-3)^2 - 7$ $\quad \begin{cases} x = 0 \rightarrow y = 2 \\ x = 6 \rightarrow y = 2 \end{cases}$

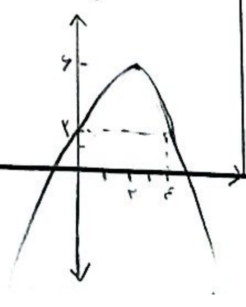


ب) $y = -x^2 + 4x + 2$ $\quad ext \begin{cases} \frac{-b}{2a} = \frac{-4}{-2} = 2 \\ \frac{-\Delta}{4a} = \frac{-24}{-4} = 6 \end{cases}$ $\rightarrow R_f = (-\infty, 6]$

$\Delta = b^2 - 4ac$ $\quad \begin{cases} x = 0 \rightarrow y = 2 \\ x = 4 \rightarrow y = 2 \end{cases}$

$\Delta = 16 - 4(-1)(2) = 16 + 8 = 24$

$\rightarrow -(x-2)^2 + 6$



الف) $\sqrt{x^۲-۶x+۲}$ ۶

$\Delta = b^۲-۴ac$

$\Delta = ۳۶-۴(۱)(۲) = ۳۶-۸ = ۲۸$

ext $\left| \begin{array}{l} \frac{-b}{۲a} = \frac{۶}{۲} = ۳ \\ \frac{-\Delta}{۴a} = \frac{-۲۸}{۴} = -۷ \end{array}\right.$ $\longrightarrow R_f = \sqrt{[-۷,+\infty)} = [۰,+\infty)$

ب) $y = \sqrt{-x^۲+۴x+۱۰}$

$\Delta = b^۲-۴ac = ۱۶-۴(-۱)(۱۰) = ۱۶+۴۰ = ۵۶$

ext $\left| \begin{array}{l} \frac{-b}{۲a} = \frac{-۴}{-۲} = ۲ \\ \frac{-\Delta}{۴a} = \frac{-۵۶}{-۴} = ۱۴ \end{array}\right.$ $\longrightarrow R_f = \sqrt{(-\infty,۱۴]} = [۰,\sqrt{۱۴}]$

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الف) $R_f = R$

ب) $R_f = \sqrt{R} = [۰,+\infty)$

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الف) $R_f = R-\{۳\}$

ب) $R_f = \sqrt{R-\{۴\}} = [۰,+\infty)-\{۲\}$

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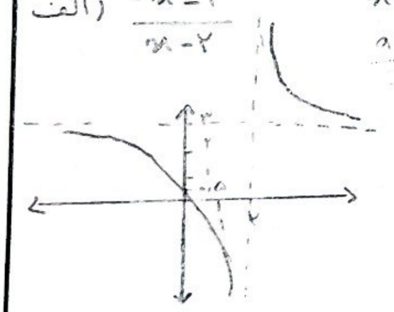
الف) $\frac{۳x-۱}{x-۲}$

$x-۲=۰ \longrightarrow x=۲$

$\frac{a}{c} = \frac{۳}{۱} = ۳$

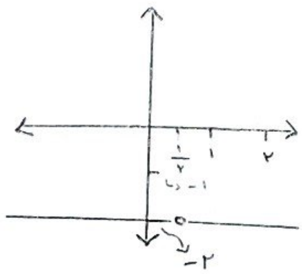


نقطه تلاقی $\longrightarrow x=۰ \longrightarrow y = \frac{-۱}{-۲} = \frac{۱}{۲}$

ب) $\frac{۴x-۲}{۱-۲x} = \frac{۲(۲x-۱)}{\cancel{۱-۲x}}^{-۱} = -۲$

$۱-۲x \neq ۰ \longrightarrow ۲x \neq ۱$

$x \neq \frac{۱}{۲}$



۱۰

الف) $R_f = [۲,+\infty)$

ب) $y = \sqrt[۳]{\frac{x^۲+۱}{x}} = \sqrt[۳]{x+\frac{۱}{x}} \longrightarrow R_f = \sqrt[۳]{(-\infty,۱]\cup[۲,+\infty)} = (-\infty,\sqrt[۳]{۲}]\cup[\sqrt[۳]{۲},+\infty)$