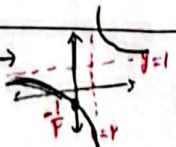
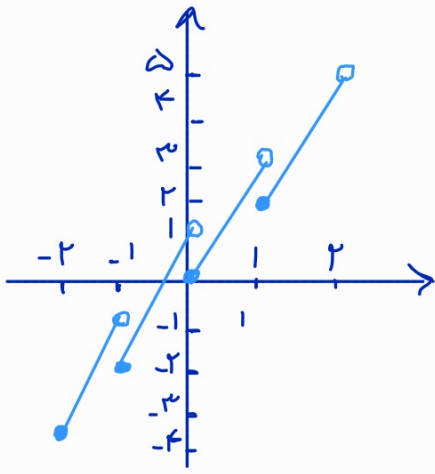


نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره کلاس: (دوازدهم) B

الف) $y = \frac{ x +1}{ x -2} \rightarrow y = \frac{x+1}{x-2} \rightarrow y=1$  $\rightarrow R_f = (-\infty, -\frac{1}{2}] \cup (1, +\infty)$ ب) $y = \frac{x^2+1}{ x } \rightarrow y = \frac{ x ^2+1}{ x } \rightarrow y = x + \frac{1}{ x } \rightarrow x = a \rightarrow a > 0 \rightarrow R_f = [2, +\infty)$	۲ ۱
$y = \frac{ax^2+bx+c}{x^2+px+q} \rightarrow yx^2+py = ax^2+bx+c \rightarrow ax^2+bx+c-yx^2-px-y=0 \rightarrow a'x^2+(b-p'y)x+(c-ay)=0$ $\rightarrow \Delta = \frac{b^2-4a'c}{4a'^2} \rightarrow \Delta = \frac{b^2-4(a-y)(c-ay)}{4(a-y)^2} \rightarrow \Delta \geq 0 \rightarrow (a-y)^2 - (c-ay)(a+y) \geq 0$ $\rightarrow y^2+ay+14 \geq 0 \rightarrow (y+2)(y+4) \geq 0 \rightarrow \frac{-4}{+1} \frac{-2}{-1} \rightarrow R_f = (-\infty, -4] \cup [-2, +\infty)$	۲ ۲
$f(x) = \frac{ax^2+bx+c}{x^2+px+q} \rightarrow f(x) = \frac{ax^2+bx+c}{x^2+px+q} \rightarrow \frac{ax^2+bx+c}{x^2+px+q} = y \rightarrow ax^2+bx+c-yx^2-px-y=0 \rightarrow (a-y)x^2+(b-px)x+(c-ay)=0$ $\rightarrow \Delta \geq 0 \rightarrow D_{f(x)} = \{x \mid \Delta \geq 0\} \rightarrow f(x) = \frac{ax^2+bx+c}{x^2+px+q} \rightarrow \frac{(a-y)x^2+(b-px)x+(c-ay)}{(x^2+px+q)+y} \rightarrow D_{f(x)} = \{x \mid \Delta \geq 0\}$  $\rightarrow f(x) = 0$ $\rightarrow \frac{x^2-1}{x^2+1} = 0 \rightarrow x^2-1=0 \rightarrow x=\pm 1$ $\Delta \geq 0 \rightarrow \frac{b^2-4a'c}{4a'^2} \geq 0 \rightarrow \frac{b^2-4(a-y)(c-ay)}{4(a-y)^2} \geq 0 \rightarrow (a-y)^2 - (c-ay)(a+y) \geq 0$ $\Delta \geq 0 \rightarrow \frac{b^2-4a'c}{4a'^2} \geq 0 \rightarrow \frac{b^2-4(a-y)(c-ay)}{4(a-y)^2} \geq 0 \rightarrow (a-y)^2 - (c-ay)(a+y) \geq 0$ $\Delta \geq 0 \rightarrow \frac{b^2-4a'c}{4a'^2} \geq 0 \rightarrow \frac{b^2-4(a-y)(c-ay)}{4(a-y)^2} \geq 0 \rightarrow (a-y)^2 - (c-ay)(a+y) \geq 0$	۲ ۳
الف) $y = \frac{x^2-1}{x^2+1} \rightarrow y = \frac{x^2-1}{x^2+1} \rightarrow y=1$  $\rightarrow R_f = [0, 1]$ ب) $y = \frac{x^2-1}{x^2+1} \rightarrow y = \frac{x^2-1}{x^2+1} \rightarrow y=1$  $\rightarrow R_f = [-1, 1]$	۲ ۴
الف) $y = \frac{x^2-1}{x^2+1} \rightarrow y = \frac{x^2-1}{x^2+1} \rightarrow y=1$ $\rightarrow R_f = (-\infty, +\infty)$ ب) $y = \frac{x^2-1}{x^2+1} \rightarrow y = \frac{x^2-1}{x^2+1} \rightarrow y=1$ $\rightarrow R_f = (-\infty, +\infty)$	۲ ۵

الف) $y = x-2 - x-3$ $\rightarrow \begin{cases} x+1 & x \geq 3 \\ x-2 & 2 < x < 3 \\ -x-1 & x \leq 2 \end{cases} \rightarrow R_F = [-2, +\infty)$ ب) $y = x-3 + x+1$ $\rightarrow R_F = [2, +\infty)$	٢ ٤
$x-2 - x+2 \leq 1 \rightarrow$ $\begin{matrix} x+2 \leq 1 & -x \leq 1 & -x-2 \leq 1 \\ \rightarrow x \leq -3 & x \geq -1 & x \geq -3 \end{matrix} \rightarrow R_F = (-\infty, -1] \cup [-\frac{1}{2}, +\infty)$ $y=1$	٢ ٧
$y = 2 x-1 + x+1 \rightarrow R_F = \mathbb{R}$	٢ ٨
الف) $y = [x] + [3-x] \rightarrow y = [x] + [-x] + 3$ $\rightarrow R_F = \{1, 3\} \rightarrow \begin{cases} x \in \mathbb{Z} \rightarrow 3 \\ x \notin \mathbb{Z} \rightarrow 1 \end{cases}$ ب) $y = 2[x] \rightarrow R_F = [-1, 1] \cup [2, 3]$ صفحة بعد...	١ ٩
الف) $y = \sin^2 x - \sin x + 1 \rightarrow \sin x = 1 \rightarrow y = 1 \quad \sin x = -1 \rightarrow y = 1 \quad \sin x = 0 \rightarrow y = 1$ $\sin x = -\frac{1}{2} \rightarrow y = \frac{5}{4} \rightarrow R_F = [\frac{5}{4}, 3]$ ب) $y = \sin^2 x + \sin x + 1 \rightarrow \sin^2 x = 0 \rightarrow y = 1 \quad \sin^2 x = 1 \rightarrow y = 0 \rightarrow \sin x = -\frac{1}{2}$ $\rightarrow \sin x = -\frac{1}{2} \rightarrow y = 0 \rightarrow R_F = [1, 3]$	١٥ ١٠



$$R_y = [-4, \infty)$$