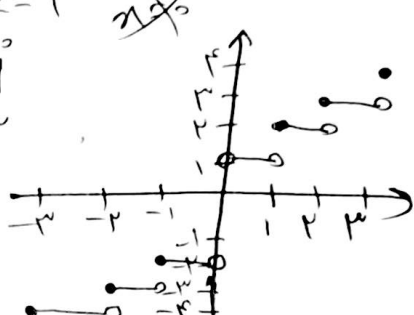
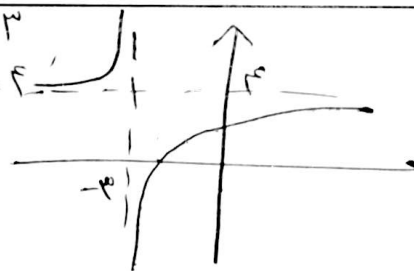
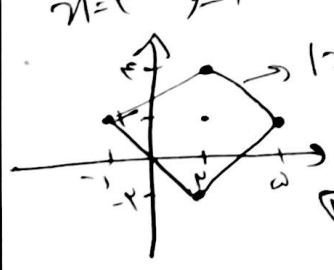


الف) $\sin^2 x = 0$ $\sin^2 x = 1$ $2x - 1 = -1$ $2x - 1 = 1$ $P_f = [-1, 1]$	ب) $\cos^2 x = -1$ $\cos^2 x = 1$ $3x - 1 = -1$ $3x - 1 = 1$ $P_g = [-1, 1]$	1
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$\frac{x}{ x } = \begin{cases} -1 & x < 0 \\ 1 & x > 0 \end{cases}$ $y = \begin{cases} -3 & -3 \leq x < -2 \\ -2 & -2 \leq x < -1 \\ -1 & -1 \leq x < 0 \\ 0 & 0 \leq x < 1 \\ 1 & 1 \leq x < 2 \\ 2 & 2 \leq x < 3 \\ 3 & x = 3 \end{cases}$ $D_f = [-3, 3]$		2
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$\frac{f(x+1)}{x+3} \rightarrow \frac{x+1}{x+3}$ $\frac{x+1}{x+3} = \frac{a}{c} = \frac{1}{3}$ 		3
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$x=2, y=1$ $x-2 + y-1 = 3$ 	$y = x+2 \quad -1 \leq x \leq 2$ $y = -x \quad -1 \leq x \leq 2$ $y = 4-x \quad 2 \leq x \leq 5$ $y = x-4 \quad 2 \leq x \leq 5$	4
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الف) $x + \frac{1}{x} = t \quad t \geq 0$ $x + \frac{1}{x} \leq -2 \quad x + \frac{1}{x} \geq 2$ $\Rightarrow t \geq 2$ معکوس $y = t + 2\sqrt{t} \rightarrow y_{\min} = 2 + 2\sqrt{2}$ $P_f = [2 + 2\sqrt{2}, +\infty)$	ب) $-\sin^2 x + 2\sin x + 3 = y$ $x = -1 \rightarrow y = 0$ $x = 1 \rightarrow y = 4$ $x = -\frac{b}{2a} = 1 \rightarrow y = 4$ $P_f = [0, 4]$	5
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$D = \{1, 2, 3, \dots, 9\}$ $f(1) = 1 \Rightarrow \frac{1}{r} = \frac{1}{r}$ $f(r) = \frac{r}{r}$ $\vdots$ $\vdots \Rightarrow \frac{1}{r}, \frac{2}{r}, \dots, \frac{r}{r}$ $f(9) = 9$	$S = \frac{1}{r} \left(\frac{1}{r} + \frac{1}{r} \right) = \sqrt{2}$
$\textcircled{X} \quad an^r + bn + c \rightarrow \begin{cases} a + b + c = 0 \\ f(r) = 1 \rightarrow 9a + r b + c = 1 \\ f(r) = 0 \Rightarrow f(r) = 1 \Rightarrow f(r) = r \Rightarrow r = 1 \Rightarrow 9a + r b + c = r \end{cases}$ $\left. \begin{aligned} a &= -\frac{1}{r} \\ b &= \frac{1}{r} \\ c &= -r \end{aligned} \right\}$ $g(x) = \sqrt{\frac{1}{r}x^r - \frac{1}{r}x - 1}$ $\frac{-b}{2a} = \frac{1}{2} \Rightarrow y = -\frac{1}{2} \Rightarrow -1$ $D_g = [-1, +\infty) \rightarrow R_g = [0, +\infty)$	
$f(x) = \frac{x(x-r)(x+r)}{x+r} = x^r - rx = (x-1)^r - 1$ $\left. \begin{aligned} c &= -1 \\ a &= -r \\ b &= r \end{aligned} \right\}$ $f\left(\frac{-r+r}{r-1}\right) = f(0) = \frac{0-0}{0+r} = 0$ $x: [-1, +\infty) - \{1\}$	
$x^r + ax^r + bx - 1 = (x-r)^r = x^r - rx^r + 1rx - 1 \Rightarrow \begin{cases} a = -r \\ b = 1r \end{cases}$ $D_f = [-r, 1r]$ $y = \sqrt{(x-r)^r} \Rightarrow y = x - r$ $\xrightarrow{x=-r} y = -1$ $\xrightarrow{x=1r} y = 1$ $R_f = [-1, 1]$	
$\frac{1}{r} \leq x < 1 \Rightarrow y = 1$ $1 \leq x < \frac{r}{r} \Rightarrow y = r$ $\frac{r}{r} \leq x < r \Rightarrow y = r$ 