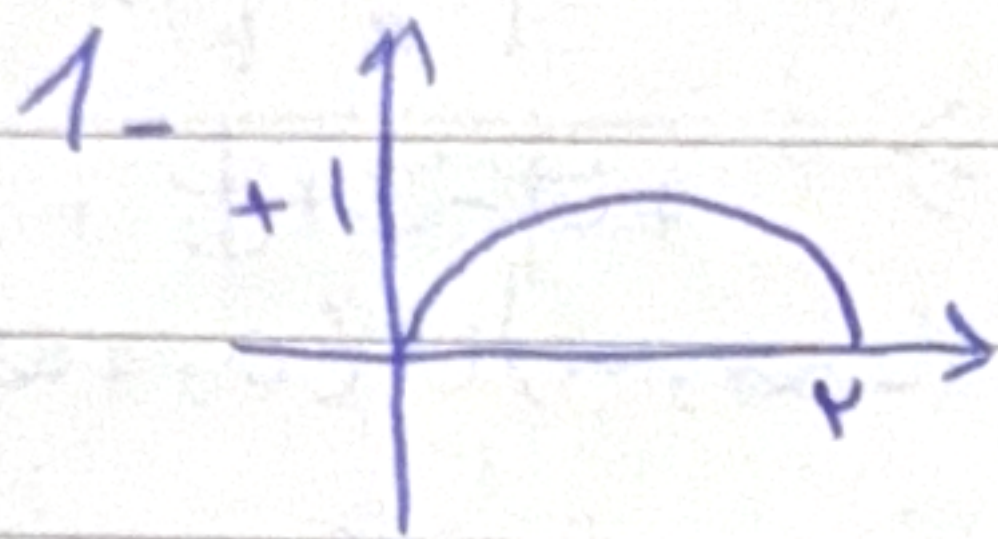
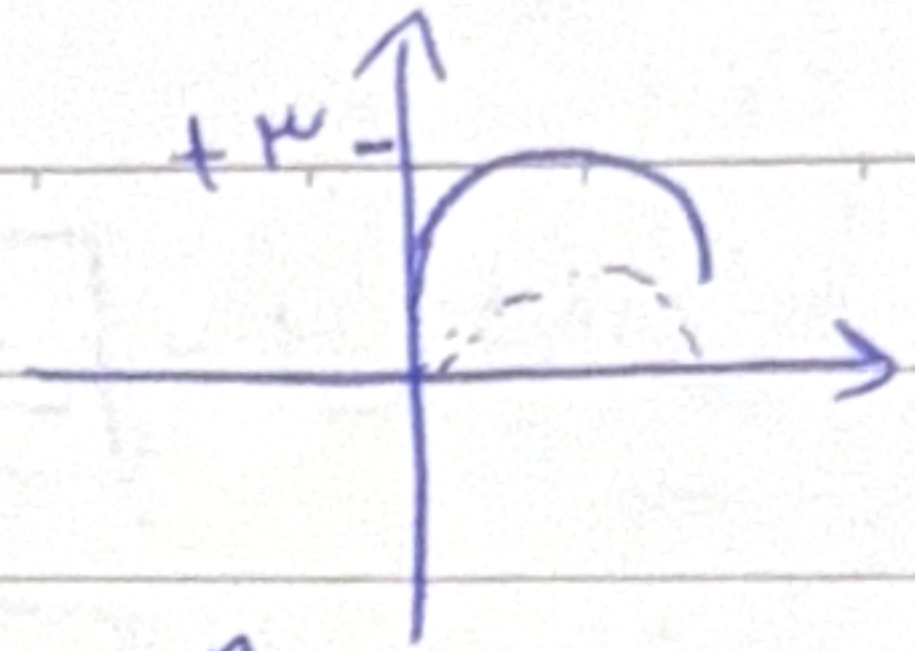


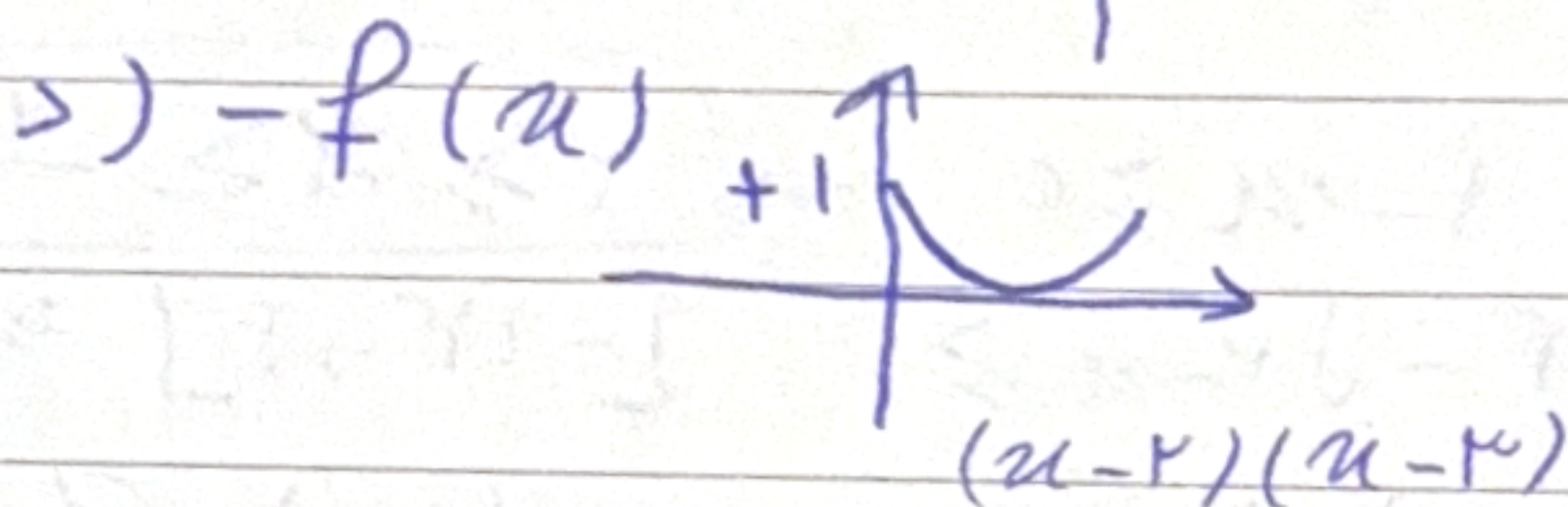
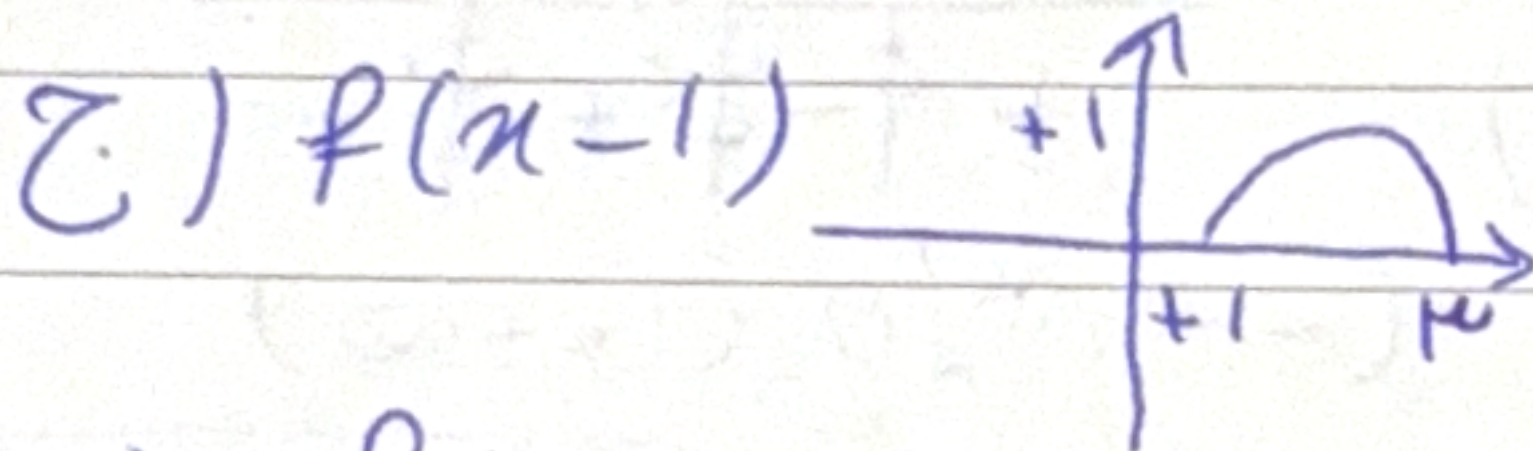
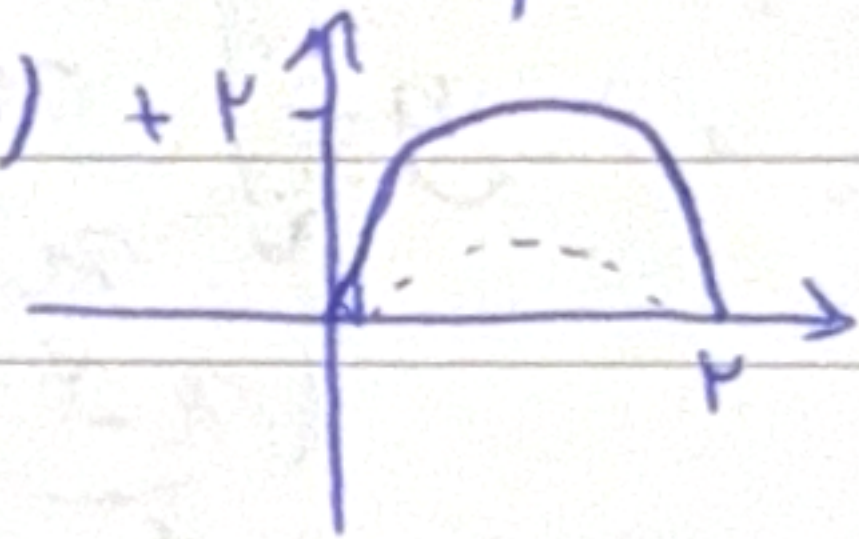
سایه زایی



الف) $f(x+1)$



ب) $2f(x) + 1$



2- الف) $x^2 - \omega x + 4 > 0$ $\frac{x^2 - \omega x + 4}{(x-2)(x-4)}$

+	-	-	+
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$(-\infty, 2) \cup (4, +\infty)$

ب) $x^2 - 4x + \omega < 0$ $\frac{x^2 - 4x + \omega}{(x-1)(x-\omega)}$

+	-	-	+
---	---	---	---

$(1, \omega)$

ج) $x^2 + 4x + \omega \geq 0$ $\frac{x^2 + 4x + \omega}{(x-1)(x-\omega)}$

+	-	-	+
---	---	---	---

$[-1, +\infty) \cup (-\infty, -\omega]$

د) $x^2 - \sqrt{x} + 4 \leq 0$ $\frac{x^2 - \sqrt{x} + 4}{(x-1)(x-4)}$

+	-	-	+
---	---	---	---

$[1, 4]$

3-

$\frac{(x-1)(x-4)}{x-\omega} \cdot \frac{x^2 - \omega x + 1}{x-\omega} < 0$ $\frac{(x-1)(x-4)(x^2 - \omega x + 1)}{(x-\omega)^2}$

-	+	-	+
---	---	---	---

$(-\infty, 1) \cup (4, \omega)$

$\frac{x^2 - 1}{x^2 + \omega x} \geq 0$ $\frac{(x-1)(x+1)}{x^2 + \omega x}$

+	-	-	+
---	---	---	---

$(\omega, +\infty) \cup (-\infty, -1)$

4- الف) $y = \sqrt{\frac{x^3-1}{x^3-x}}$ $\frac{x^3-1}{x^3-x} \geq 0$ $\frac{x^3-1}{x(x^2-1)} \geq 0$ $\frac{-1 \ 0 \ +1}{+ \ - \ + \ +}$
 $(-\infty, -1) \cup (0, +\infty)$

ب) $y = \sqrt{\frac{x^2-14}{x^2-5x+6}}$ $\frac{x^2-14}{(x-3)(x-2)} \geq 0$ $\frac{-\infty \ +1 \ +\infty}{+ \ - \ + \ +}$
 $(-\infty, -3] \cup (1, +\infty)$

5- $\sqrt{x-1} - \sqrt{x-2}$

$\sqrt{x-2} \leq -x$

$x-2 \leq 14$

$-15 \leq x$

$\sqrt{x-1} - \sqrt{x-2}$

$x-2 \geq 0 \rightarrow x \geq 2$

$x-1 \geq 0 \rightarrow x \geq 1$

$x \geq \sqrt{x-2} \rightarrow 14 \geq x-2$

$-15 \leq x$

$15 \geq -x$

$x-2 \geq 0 \rightarrow x \geq 2$

$x-1 \geq 0 \rightarrow x \geq 1$

$x \geq \sqrt{x-2}$

$9 \geq x-2$

$D_f \rightarrow [2, 11]$

$11 \geq x$

6- $\sqrt{x-2} - x^2$

$x-2 \geq 0$

$x \geq x^2$

$D_f \rightarrow [-2, 2]$

$x \geq x^2$

$x \geq x \geq -x$

$\sqrt{|x|-9}$

$|x|-9 \geq 0$

$|x| \geq 9$

$|x| \geq 9$

$[9, +\infty) \cup (-\infty, -9]$

$x \geq 9 \rightarrow -9 \geq x$

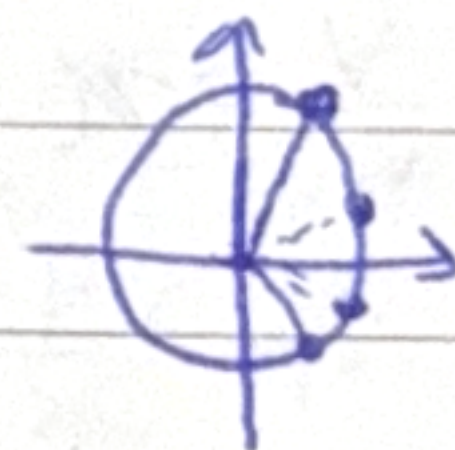
$$7 - \sqrt[3]{\frac{|x|+1}{|x|-1}} \quad \mathbb{R} - \{-1\}$$

$$\sqrt[3]{\frac{\sqrt{x}+1}{\sqrt{x}-1}} \quad \begin{array}{l} x \geq 0 \\ \sqrt{x} \neq 1 \\ x \neq 1 \end{array} \quad \begin{array}{l} \mathbb{R}^+ - \{0\} - \{1\} \\ [0, +\infty) - \{1\} \end{array}$$

$$8 - \frac{\sin x}{y \cos x - 1}$$

$$\mathbb{R} - \left\{ yk\pi \pm \frac{\pi}{4} \right\}$$

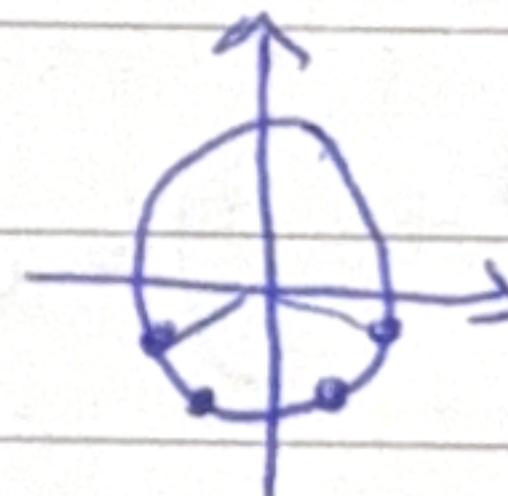
$$\begin{array}{l} y \cos x - 1 \neq 0 \\ \cos x \neq \frac{1}{y} \end{array}$$



$$\frac{\cos x + 1}{y \sin x + 1}$$

$$y \sin x + 1 \neq 0$$

$$\mathbb{R} - \left\{ yk\pi - \frac{\pi}{4}, yk\pi + \frac{\pi}{4} \right\} \quad \sin x = -\frac{1}{y}$$

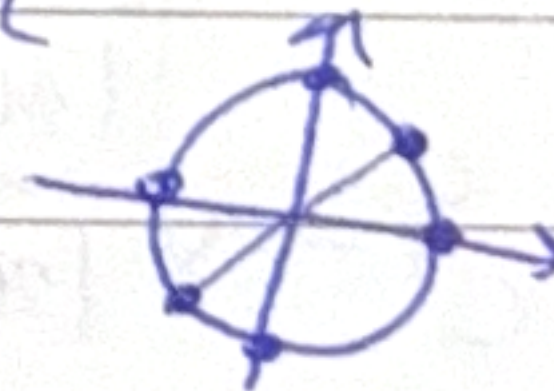


$$\frac{\tan x + y}{\sec x - 1}$$

$$\frac{\frac{\sin x}{\cos x} + y}{\frac{1}{\cos x} - 1}$$

$$\begin{array}{l} \cos x, \sin x \neq 0 \\ \frac{\cos x}{\sin x} \neq 1 \end{array}$$

$$\mathbb{R} - \left\{ \frac{k\pi}{y}, k\pi + \frac{\pi}{y} \right\}$$



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

$$y \sin^2 x - 1 \neq 0$$

$$\sin x = \sqrt{\frac{1}{y}} = \frac{1}{\sqrt{y}}$$

$$\mathbb{R} - \left\{ yk\pi + \frac{\pi}{y}, yk\pi + \frac{\pi}{y} \right\}$$



$$9 - y = \frac{1}{\sqrt{\gamma|x-\gamma| - \frac{1}{\gamma}}}$$

$$D_f = (-\infty, \frac{\gamma}{\kappa}) \cup (\frac{\gamma}{\kappa}, +\infty)$$

$$\gamma|x-\gamma| - \frac{1}{\gamma} > 0$$

$$\gamma|x-\gamma| > \frac{1}{\gamma}$$

$$|x-\gamma| > \frac{1}{\gamma^2}$$

$$\frac{\gamma}{\kappa} > x$$

$$x > \frac{\gamma}{\kappa}$$

$$-\frac{1}{\kappa} > x - \gamma > \frac{1}{\kappa}$$

$$\frac{\gamma}{\kappa} > x > \frac{\gamma}{\kappa}$$

$$10 - y = \sqrt{\kappa - \gamma|x|}$$

$$\kappa - \gamma|x| \geq 0$$

$$D_f = [-\gamma, \gamma]$$

$$\kappa \geq \gamma|x|$$

$$\gamma \geq |x|$$

$$\gamma \geq x \geq -\gamma$$

$$y = \sqrt{\frac{|x|}{|x|}}$$

$$\mathbb{R} - \{0\}$$