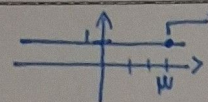


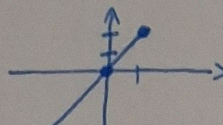
الف) $y^3 - x = 2x^2 \rightarrow y^3 = 2x^2 + x \xrightarrow{x=1} y^3 = 3 \rightarrow y = \sqrt[3]{3} \checkmark$
 $x=2 \rightarrow y^3 = 10 \rightarrow y = \sqrt[3]{10} \checkmark$ تابع مستقیم

ب) $|y| + x^2 = x + 3 \xrightarrow{x=0} |y| = 3 \rightarrow y = \pm 3 \times$ تابع مستقیم

ج) $\sqrt{x-k} + |y-2| = 0 \rightarrow \sqrt{x-k} = 0 \rightarrow x=k$ و $|y-2| = 0 \rightarrow y=2$ $\checkmark$ تابع مستقیم

د) $x = \cos y \xrightarrow{x=0} \cos y = 0 \rightarrow y = 90^\circ, 270^\circ \times$ تابع مستقیم

الف) $y = k \rightarrow$  $\rightarrow y=1$ یا $y=0 \times x+1$ ضابطه

ب) $y = ax + b \rightarrow y^2x$  $\rightarrow y^2x$ ضابطه
 عرفان از مبدأ $\begin{cases} 1 \rightarrow x \\ 2 \rightarrow y \end{cases} \rightarrow 2 = 2 + b \rightarrow b = 0$

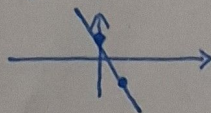
الف) تابع معکوس $y = x \rightarrow y = ax + b = x \rightarrow ax + b = x \rightarrow a = 1$
 $b = 0$
 $a + 2b = 1 + 0 = 1$

ب) $\begin{cases} 2 \\ 1 \end{cases} \rightarrow \min \rightarrow a > 0$ $\xrightarrow{x^2 \text{ ضریب}} \frac{-\Delta}{4a} = 1 \rightarrow \frac{-b^2 + 4ac}{4a} \rightarrow \frac{-k^2 + 4kc}{4k} = 1 \rightarrow -k + 4c = 4 \rightarrow 4 = -k + 4c$
 $\rightarrow 4 = -k + 4c$
 $\rightarrow 1 = -k + 4c$
 $\rightarrow c = 1$
 $y = x^2 - 2x + 1 \rightarrow c = 1$
 $\rightarrow a + b = k + 1 = 4$

الف) $y = 2x + 1 \rightarrow \begin{cases} x=0 & y=1 \\ x=1 & y=3 \end{cases}$



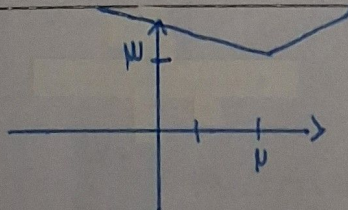
ب) $y = -3x + 1 \rightarrow \begin{cases} x=0 & y=1 \\ x=1 & y=-2 \end{cases}$



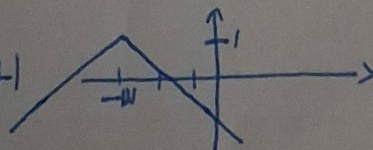
ج) $y = x^2$ $\rightarrow$

د) $y = x^3$ $\rightarrow$

الف) $y = |x-2| + 3$



ب) $y = -|x+3| + 1$



$$1) y = \frac{x+k}{x^2-kx} \rightarrow \frac{x+k}{x(x-k)} \rightarrow x(x-k) \neq 0 \rightarrow x \neq 0$$

$$\rightarrow D_f = \mathbb{R} - \{0, k\}$$

$$2) y = \frac{x+k}{x^2-vx+14} \rightarrow \Delta: b^2-4ac \rightarrow k^2-4k = -16 \rightarrow D_f = \mathbb{R}$$

$$3) y = \frac{x+k}{x^2+x+k} \rightarrow \Delta: b^2-4ac \rightarrow 1-4k = -16 \rightarrow D_f = \mathbb{R}$$

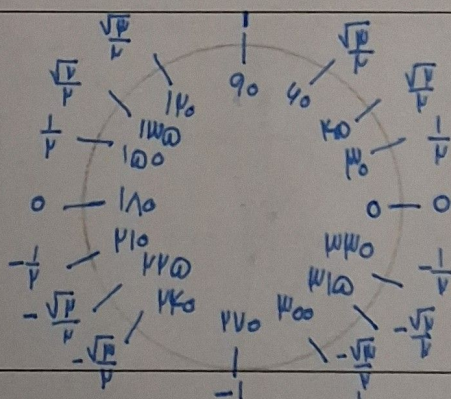
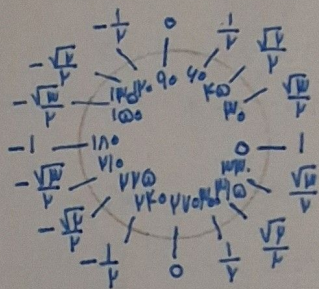
$$4) y = \frac{x+k}{x^2-kx^2} \rightarrow \frac{x+k}{x^2(x^2-k)} \rightarrow \frac{x+k}{x^2(x-v)(x+v)} \left\{ \begin{array}{l} x \neq 0 \\ x \neq v \\ x \neq -v \end{array} \right. \rightarrow D_f = \mathbb{R} - \{0, v, -v\}$$

$$5) y = \sqrt{4-x} + \sqrt{x-1} \rightarrow \begin{cases} 4-x \geq 0 \rightarrow x \leq 4 \\ x-1 \geq 0 \rightarrow x \geq 1 \end{cases} \rightarrow D_f = [1, 4]$$

$$6) \frac{x+1}{x^2+1} \left\{ \begin{array}{l} x^2+1 \neq 0 \text{ always} \end{array} \right. \rightarrow D_f = \mathbb{R}$$

$$7) \frac{\sqrt{x-1}}{x-k} \left\{ \begin{array}{l} x-1 \geq 0 \rightarrow x \geq 1 \\ x-k \neq 0 \rightarrow x \neq k \end{array} \right. \rightarrow D_f = [1, +\infty) - \{k\}$$

$$8) \frac{x+1}{|x|+x^2} \left\{ |x|+x^2 \neq 0 \text{ always} \right. \rightarrow D_f = \mathbb{R}$$



$$9) -\cos \frac{\pi}{4} \rightarrow -\cos 45^\circ \rightarrow \left| -\frac{1}{\sqrt{2}} \right| \rightarrow -\cos 140^\circ = \frac{1}{\sqrt{2}}$$

$$\rightarrow \sin \frac{\pi}{4} \cdot \sin \frac{\pi}{4}$$

$$10) -\cos \frac{11\pi}{4} \rightarrow -\cos 330^\circ \rightarrow \left| +\frac{\sqrt{3}}{2} \right| \rightarrow -\cos 110^\circ = -\frac{\sqrt{3}}{2}$$

$$\rightarrow \sin \frac{3\pi}{4} \cdot \sin \frac{\pi}{4}$$