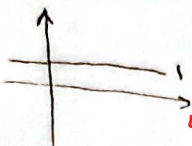


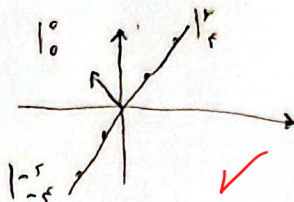
الف) $\begin{cases} y_1^2 = 2x_1^2 + x_1 \\ y_2^2 = 2x_2^2 + x_2 \end{cases} \xrightarrow{x_1=x_2} y_1^2 = y_2^2 \Rightarrow y_1 = y_2 \mid \begin{matrix} y_1 > 0, y_2 > 0 \\ y_1 < 0, y_2 < 0 \end{matrix}$ تابع همبسته

ب) $x=0 \Rightarrow |y|=3 \Rightarrow y=\pm 3$ یک جواب دارد

ج) $\sqrt{x-4} \geq 0, |y-2| \geq 0 \Rightarrow x=4 \Rightarrow y=2$ یک نقطه

د) $x=0$ و $y=0$ یک سهمی است که از هم جداست

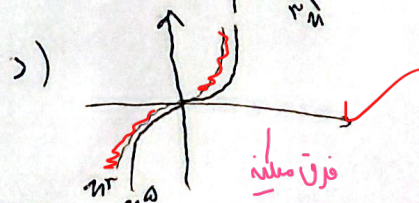
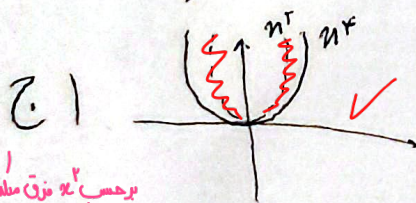
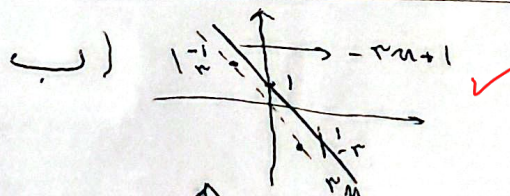
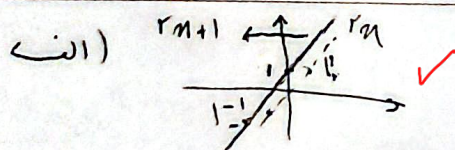
الف) $\bar{y} = y = k \Rightarrow$  ۱

ب) $\bar{y} = ax + b = y \Rightarrow a=2 \mid \bar{y} \Rightarrow y=2x$ 

الف) $y=x \Rightarrow \bar{y} = ax + b \mid \begin{matrix} a=1 \\ b=0 \end{matrix} \Rightarrow 1+2x=1$

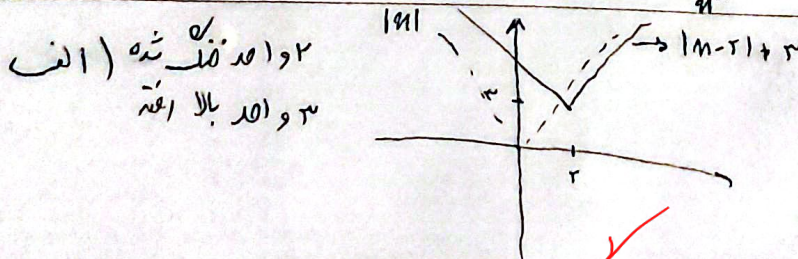
ب) $y = x^2 + ax + b \Rightarrow \text{ext} \mid \begin{matrix} -\frac{b}{2a} = 2 \Rightarrow -b = 4a \Rightarrow b = -4a \\ y = 4 + 2a + b \Rightarrow 1 = 4 + 2a - 4a \Rightarrow -2 = -2a \Rightarrow a = 1 \end{matrix}$
 $\frac{5}{2} + 2x - 4 = \frac{5}{2} + (-12) = \frac{5-24}{2} = -\frac{19}{2}$

دامنه صحیح

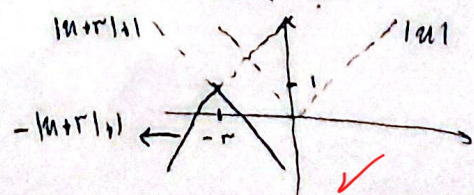


بر حسب $\frac{1}{2}$ فرق میانه (متوسطات حسابی و هندسی)

فرق میانه



ب) ۳ و ۱۰ با هم میزنند
 ۱ و ۱۰ با ۱ میزنند
 نتیجه ۱۱ و ۱۱ میزنند



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الف) $x^2 - 5x + 4 = 0 \Rightarrow x(x-4) = 0 \Rightarrow x = 0, 4 \Rightarrow D_f = \mathbb{R} - \{0, 4\}$

ب) $x^2 - 7x + 14 = 0 \Rightarrow \Delta = 49 - 56 = -7 < 0 \Rightarrow$ ندارد $\Rightarrow D_f = \mathbb{R}$

ج) $x^2 + x + 5 = 0 \Rightarrow \Delta = 1 - 20 = -19 < 0 \Rightarrow$ ندارد $\Rightarrow D_f = \mathbb{R}$

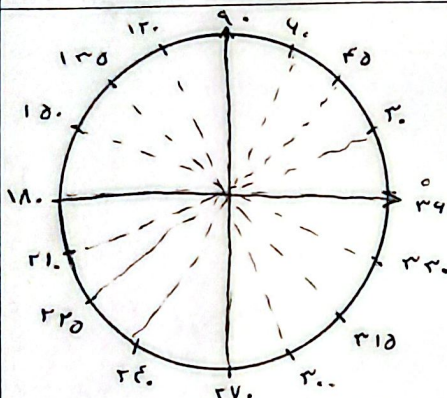
د) $x^2 - 5x + 4 = 0 \Rightarrow x(x-4) = 0 \Rightarrow x = 0, 4 \Rightarrow D_f = \mathbb{R} - \{0, 4\}$ $D_f = \mathbb{R} - \{-2, 0, 2\}$

الف) $\sqrt{4-x} \geq 0, \sqrt{x-5} \geq 0 \Rightarrow x \leq 4 \wedge x \geq 5 \Rightarrow D_f = [5, 4]$

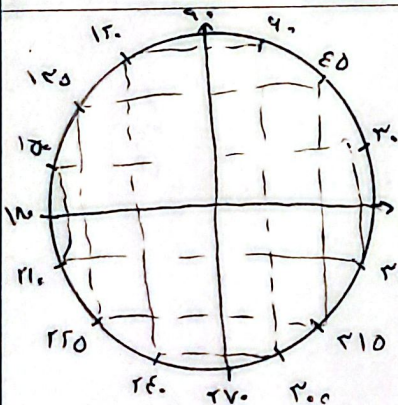
ب) $x^2 + 1 \neq 0 \Rightarrow x^2 > -1 \Rightarrow x^2 + 1 > 0 \Rightarrow x \in \mathbb{R} \Rightarrow D_f = \mathbb{R}$

ج) $x - 5 \neq 0 \Rightarrow x \neq 5 \Rightarrow D_f = \mathbb{R} - \{5\}$ $x - 4 > 0 \Rightarrow x > 4 \Rightarrow D_f = [4, \infty) - \{5\}$

د) $|x| + x^2 \neq 0 \Rightarrow |x| > 0, x^2 > 0 \Rightarrow x \in \mathbb{R} \Rightarrow D_f = \mathbb{R} - \{0\}$



$\cos 0 = 1, \cos 30 = \frac{\sqrt{3}}{2}, \cos 45 = \frac{1}{\sqrt{2}}, \cos 60 = \frac{1}{2}, \cos 90 = 0$
 $\cos 120 = -\frac{1}{2}, \cos 135 = -\frac{1}{\sqrt{2}}, \cos 150 = -\frac{\sqrt{3}}{2}, \cos 180 = -1$
 $\cos 225 = -\frac{1}{\sqrt{2}}, \cos 270 = 0, \cos 315 = \frac{1}{\sqrt{2}}, \cos 360 = 1$



$\sin 0 = 0, \sin 30 = \frac{1}{2}, \sin 45 = \frac{1}{\sqrt{2}}, \sin 60 = \frac{\sqrt{3}}{2}, \sin 90 = 1$
 $\sin 120 = \frac{\sqrt{3}}{2}, \sin 135 = \frac{1}{\sqrt{2}}, \sin 150 = \frac{1}{2}, \sin 180 = 0$
 $\sin 225 = -\frac{1}{\sqrt{2}}, \sin 270 = -1, \sin 315 = -\frac{1}{\sqrt{2}}, \sin 360 = 0$

الف) $\frac{2\pi}{3} = 120^\circ$ درازی $\Rightarrow \left| -\frac{1}{2} \right| \Rightarrow \cos = -\frac{1}{2} \Rightarrow$ قرینه $\Rightarrow \sin = \frac{1}{2} \Rightarrow x = 30, 150$

ب) $\frac{11\pi}{4} = 315^\circ$ درازی $\Rightarrow \left| -\frac{\sqrt{2}}{2} \right| \Rightarrow \cos = -\frac{\sqrt{2}}{2} \Rightarrow$ قرینه $\Rightarrow \sin = \frac{\sqrt{2}}{2} \Rightarrow x = 45, 135$

$\cos \frac{11\pi}{4} = \frac{\sqrt{2}}{2} \xrightarrow{\text{قرینه}} -\frac{\sqrt{2}}{2}$

صیغه‌های $\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$ برابر $\frac{\sqrt{3}}{2}$ است.

$$\text{ج) } y = x^2 + ax + b \quad \text{Min} \begin{vmatrix} 2 \\ 1 \end{vmatrix}$$

$$x_s = \frac{-b}{2a} \rightarrow \frac{-a}{2} = 2 \Rightarrow \underline{\underline{a = -4}}$$

$$y_s = 1 \rightarrow 1 = (2)^2 - 4(2) + b \Rightarrow \underline{\underline{b = 5}}$$

$$\left. \begin{array}{l} \\ \end{array} \right\} a + 2b = -4 + 2(5) = \underline{\underline{6}}$$