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1

$$4a = a^2 + 3$$

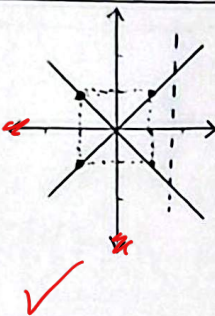
$$a^2 - 4a + 3 = 0$$

$$(a-1)(a-3) = 0 \rightarrow a \in [1, 3] \quad a = 3$$

الف) $x = y$

$x = -y$

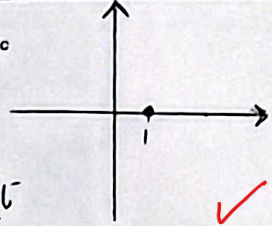
تابع نیست زیرا برای x و y مشخص به فرد x نمی گنجد.



$$|x| + \sqrt{|x|-1} = 0$$

$$|x|-1=0 \rightarrow |x|=1$$

تابع هست چون فقط نقطه $x=1$ را دارد.



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2

$$3 = |y-1| \rightarrow |y-1| = 3$$

$$1 = |y-1|$$

$$y = 2, 0$$

تابع نیست x

$$y = x^3 \rightarrow y = x^3$$

$$y(y^3-1) = 0$$

$$y \in \{0, 1, -1\}$$

تابع نیست x

$$\sin^2 x + \cos^2 \frac{x}{2} = 1$$

$$\frac{1}{4} + \frac{1}{4} = 1$$

$$x = \frac{\pi}{4} \rightarrow \frac{1}{4} + \cos^2 \frac{x}{2} = 1$$

$$\cos^2 \frac{x}{2} = \frac{3}{4}$$

$$\cos \frac{x}{2} = \pm \frac{\sqrt{3}}{2}$$

$$\cos x = \pm 1$$

$$\cos x = 1 \rightarrow x = 2k\pi$$

$$\cos x = -1 \rightarrow x = (2k+1)\pi$$

صورت سوال اشتباه شده

تابع نیست x

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$$2xy = x \rightarrow x = 0 \rightarrow y = \mathbb{R}$$

تابع نیست x

$$y^5 + 3y^2 = 0 \rightarrow y^2(y^3 + 3) = 0$$

$$y^3 + 3 = 0 \rightarrow y^3 = -3$$

$$y = \sqrt[3]{-3}$$

$$y = -\sqrt[3]{3}$$

$$y = 0$$

$$y = \sqrt[3]{3}$$

$$y = -\sqrt[3]{3}$$

$$y = 0$$

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$$y = -\sqrt[3]{3}$$

$$y = 0$$

$$y = \sqrt[3]{3}$$

$$y = -\sqrt[3]{3}$$

$$y = 0$$

$$|y-1| = 4x - x^2$$

$$x=1 \rightarrow |y-1| = 3$$

$$y-1 = \pm 3 \rightarrow y = 4, -2$$

تابع نیست x

$$y^5 + 3y^2 = 0 \rightarrow y^2(y^3 + 3) = 0$$

$$y^3 + 3 = 0 \rightarrow y^3 = -3$$

$$y = \sqrt[3]{-3}$$

$$y = -\sqrt[3]{3}$$

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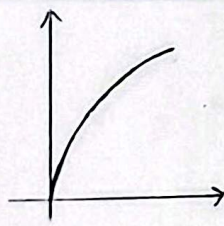
$$y = -\sqrt[3]{3}$$

$$y = 0$$

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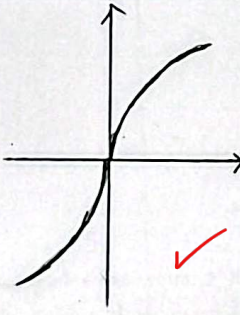
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الف)



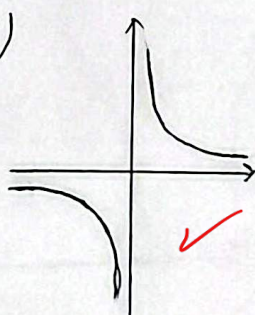
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ب)



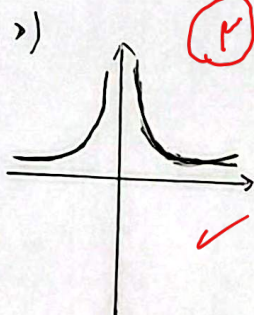
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ج)



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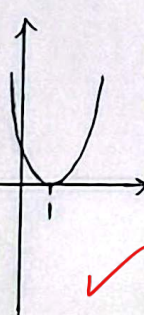


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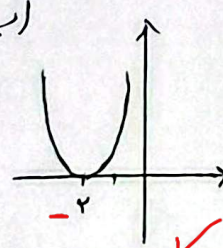
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الف)



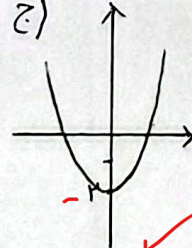
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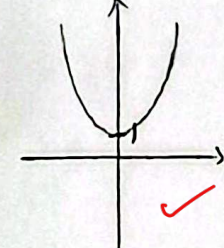
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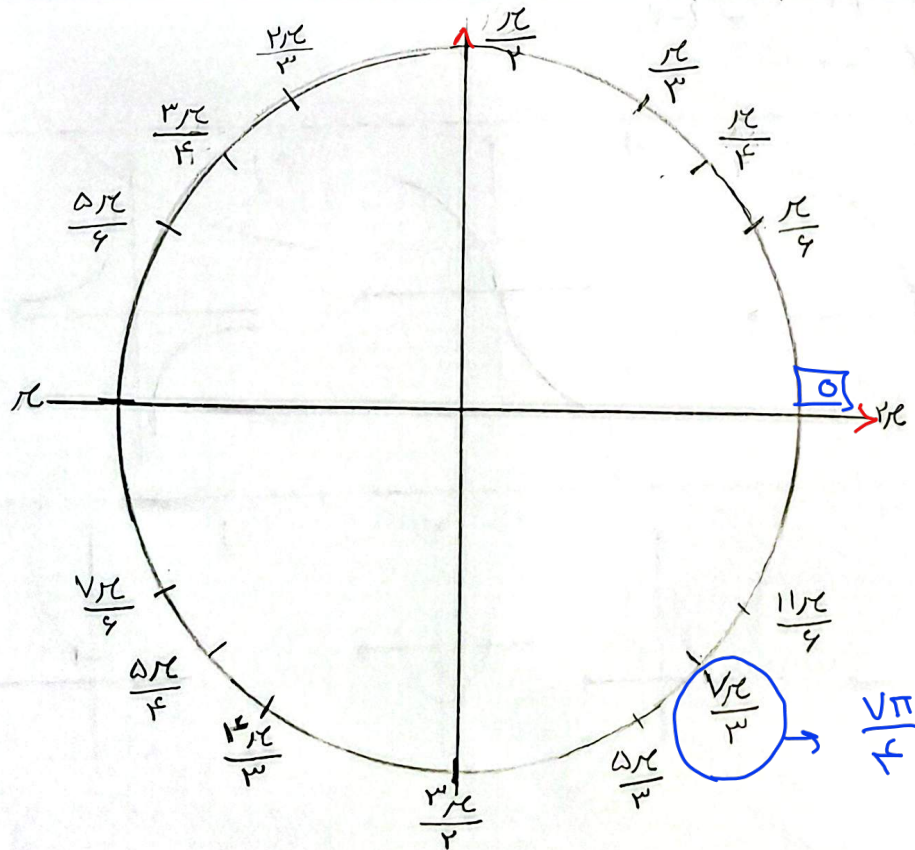
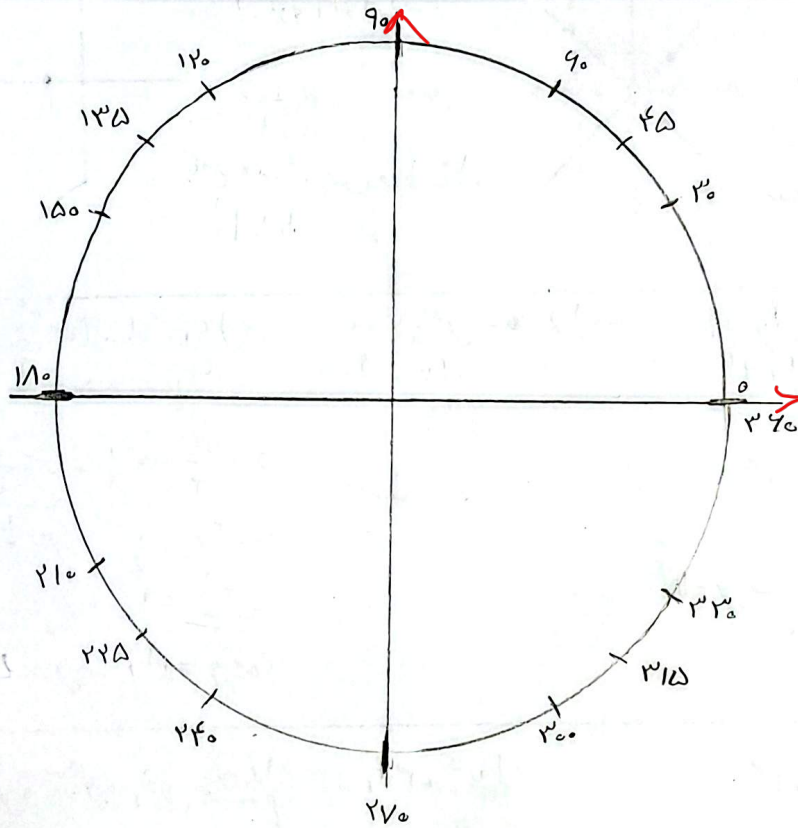
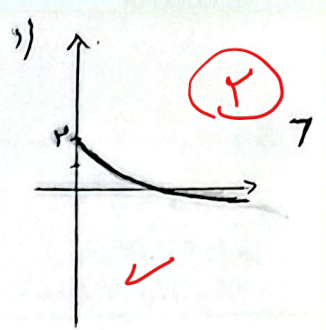
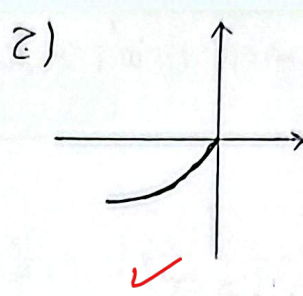
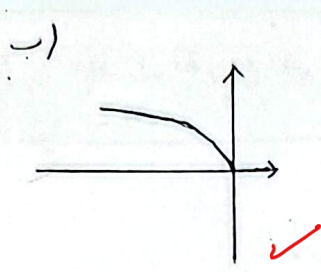
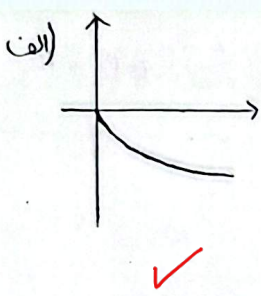
د)



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$$\text{الف) } \cos 120^\circ = -\frac{1}{2} \quad \left| \begin{array}{c} -\frac{1}{2} \\ \frac{\sqrt{3}}{2} \end{array} \right| \quad \checkmark$$

$$\text{ب) } \sin 150^\circ = \frac{1}{2} \quad \left| \begin{array}{c} \frac{\sqrt{3}}{2} \\ -\frac{1}{2} \end{array} \right| \quad \checkmark$$

$$\text{ج) } \cos \frac{5\pi}{3} = \frac{1}{2} \quad \left| \begin{array}{c} -\frac{1}{2} \\ \frac{\sqrt{3}}{2} \end{array} \right| \quad \checkmark$$

$$\text{د) } \sin \frac{11\pi}{6} = -\frac{1}{2} \quad \left| \begin{array}{c} \frac{\sqrt{3}}{2} \\ -\frac{1}{2} \end{array} \right| \quad \checkmark$$

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(4)

$$ج) \sin^2 x + \cos^2 \frac{y}{r} = 1$$

$$x=0 \rightarrow \sin^2(0) + \cos^2 \frac{y}{r} = 1 \rightarrow \cos^2 \frac{y}{r} = 1 \Rightarrow \begin{cases} \frac{y}{r} = 0 \Rightarrow y = 0 \\ \frac{y}{r} = \pi \Rightarrow y = 2\pi \end{cases}$$