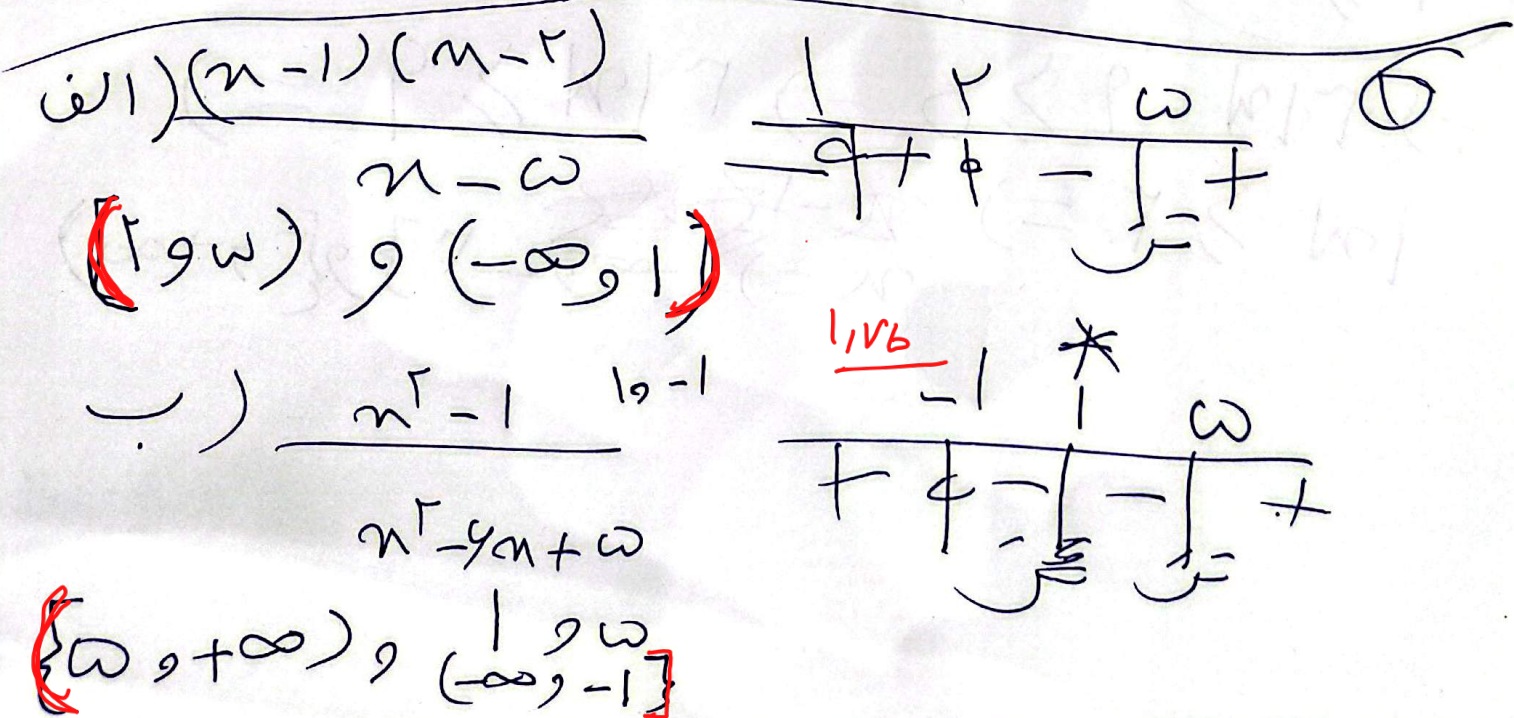
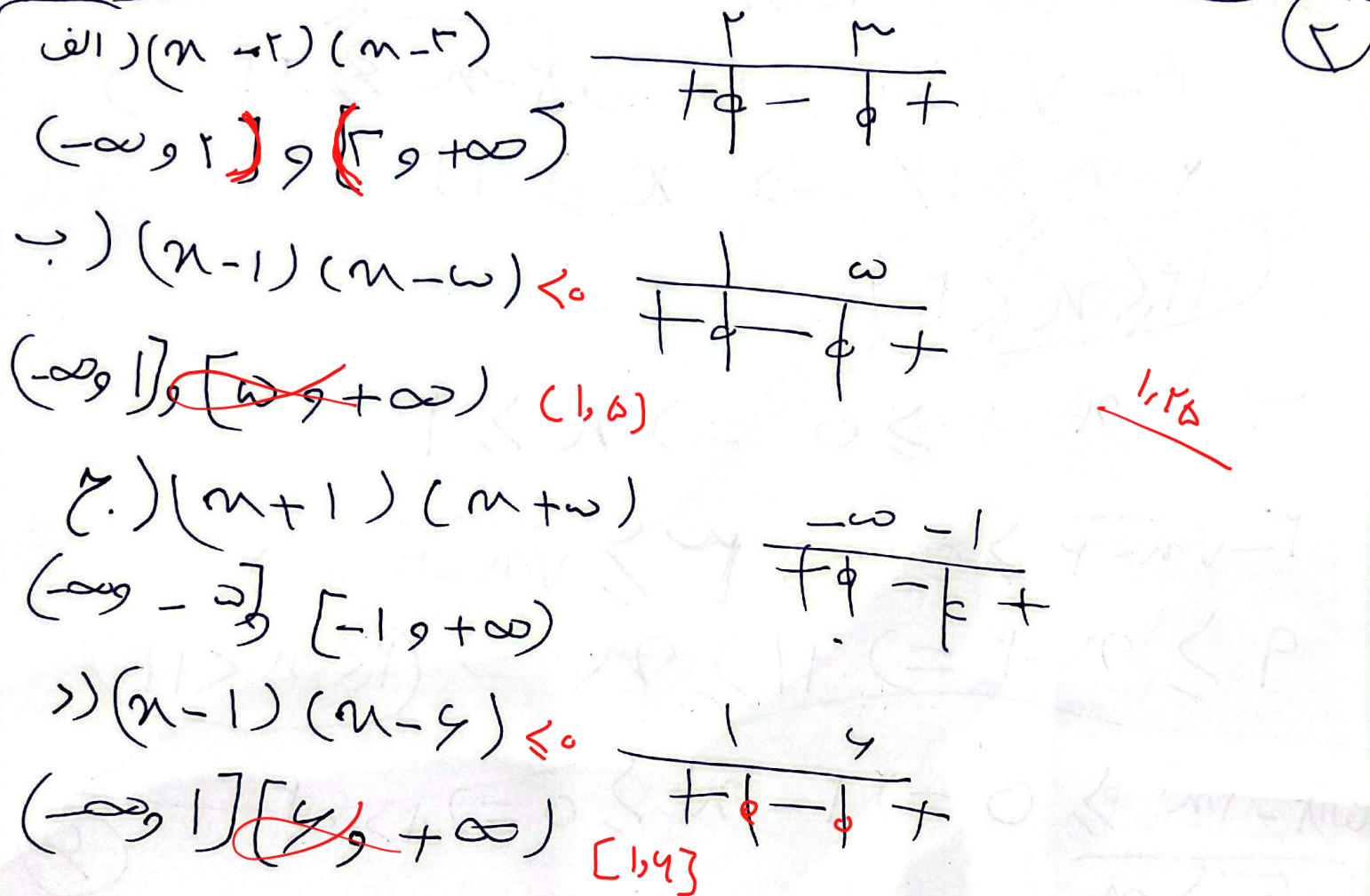
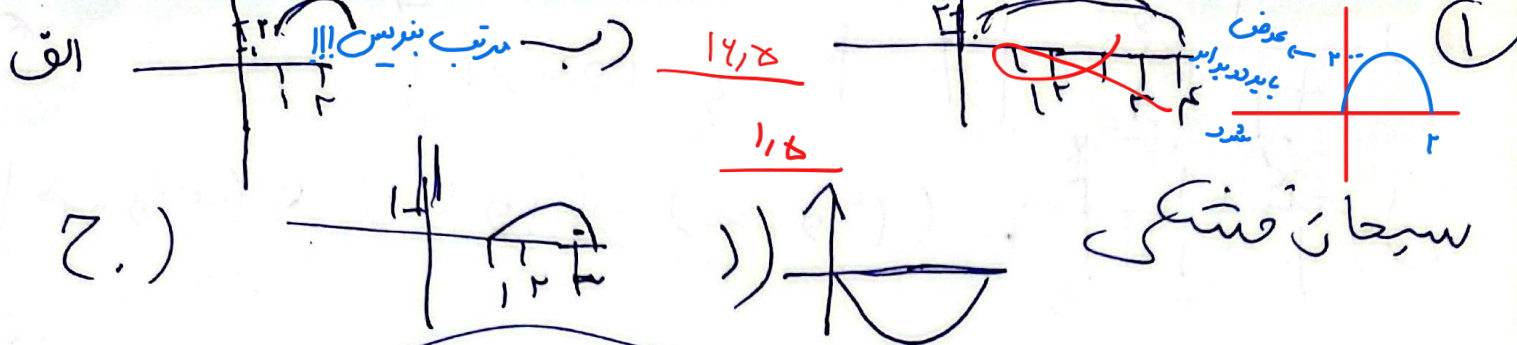




$$\frac{(x-1)(x^2+x+1)}{x(x-1)(x+1)} + \frac{0}{x} + \frac{0}{x} + \frac{0}{x} + \frac{0}{x} = R - \{ \cancel{-1}, \cancel{0}, \cancel{1} \} R = (-\infty, -1) \cup (0, +\infty) - \{1\}$$

$$\frac{1}{x} = \frac{1}{x-1} + \frac{1}{x+1} \Rightarrow \frac{1}{x} = \frac{1}{x-1} + \frac{1}{x+1}$$

اف) $x - x \geq 0 \Rightarrow x \leq 2$

$$x - \sqrt{x-2} \geq 0 \Rightarrow x - \sqrt{x-2} \geq 0 \Rightarrow x \geq \sqrt{x-2}$$

$$x - \sqrt{x-2} \geq 0 \Rightarrow x \geq -1$$

$$-1 \leq x \leq 2$$

$\textcircled{2} \checkmark$

ب) $x - 2 \geq 0 \Rightarrow x \geq 2$

$$x - \sqrt{x-2} \geq 0 \Rightarrow x \geq \sqrt{x-2} \Rightarrow$$

$$9 \geq x - 2 \Rightarrow 11 \geq x \Rightarrow 2 \leq x \leq 11$$

ج) $x - 2x^2 \geq 0 \Rightarrow 2 - x^2 \geq 0 \Rightarrow 2 \geq x^2$

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

$$x^2 \leq 2 \Rightarrow -\sqrt{2} \leq x \leq \sqrt{2} \Rightarrow D_f = [-\sqrt{2}, \sqrt{2}]$$

د) $x|x| - 9 \geq 0 \Rightarrow x|x| \geq 9 \Rightarrow$

$$|x| \geq 3 \Rightarrow x \in (-\infty, -3] \cup [3, +\infty)$$

ايف) $|x - 3| \neq 0 \Rightarrow |x| = 3 \Rightarrow x = 9 - 3$ (C)

$x = \mathbb{R} - \{3, -3\}$

$\therefore \sqrt{x} - 3 \neq 0 \Rightarrow \sqrt{x} = 3 \Rightarrow x = 9$

$x = \mathbb{R} - \{9\}$ 

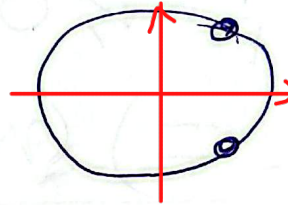
$x = [9, +\infty) - \{9\}$

l.v.b

ايف) $2 \cos x - 1 \neq 0 \Rightarrow \cos x = 1 \Rightarrow \cos x = 1$

$x = [0, 2\pi]$

$\mathbb{R} - \{2k\pi + \frac{\pi}{3}\}$

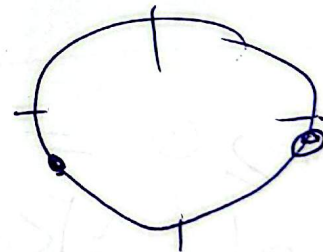


$\therefore \sin x \neq 1 \Rightarrow \sin x = -1 \Rightarrow$

~~$x = [0, 2\pi]$~~

$\mathbb{R} - \{2k\pi - \frac{\pi}{2}, 2k\pi + \frac{\pi}{2}\}$

$\{2k\pi - \frac{\pi}{2}, 2k\pi + \frac{\pi}{2}\}$

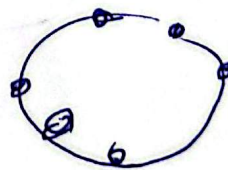


l.v.b

(C) $\cos = 0 \Rightarrow 9 \cdot 2\pi$
 $\sin = 0 \Rightarrow 18 \cdot 2\pi$

$\cot x = 1 \Rightarrow \cot x = \frac{1}{\sqrt{3}}$

$\mathbb{R} - \{\frac{k\pi}{\sqrt{3}}, k\pi + \frac{\pi}{\sqrt{3}}\}$



$$\Rightarrow \sin^2 m = r^2 \Rightarrow \sin^2 = \frac{r^2}{m^2} \Rightarrow$$

$$\sin^2 = \frac{\sqrt{r}}{m} \Rightarrow \sin^2 \in [0, 1] \Rightarrow r \in [0, m^2]$$

$$R = \left\{ km + \frac{m}{p} \right\}$$

✓

$$y = \sqrt{r|m-1|} - \frac{1}{r}$$

9

$$r|m-1| - \frac{1}{r} \geq 0 \Rightarrow r|m-1| \geq \frac{1}{r}$$

$$|m-1| \geq \frac{1}{r^2} \Rightarrow m \geq \frac{1}{r^2} + 1$$

$$R = \left\{ \frac{1}{r^2} + 1 \right\}$$

1, 1/2

$$r^2 - r|m| \geq 0 \Rightarrow r \geq r|m| \Rightarrow$$

10

$$r \geq |m| \Rightarrow -r \leq m \leq r$$

$$\Rightarrow \sqrt{\frac{|m|}{|m|}} \Rightarrow R = \{0\}$$

11 ✓