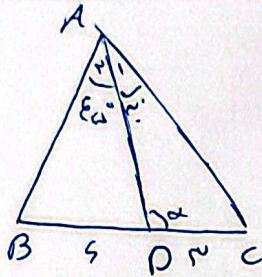


$$OZ = 1 \quad \left. \begin{aligned} BZ = \tan^r \alpha &= \frac{1 + \cos^r \alpha}{\sin^r \alpha} \end{aligned} \right\} \xrightarrow{\text{قضیه فیثاغورس}} OB^r = OZ^r + BZ^r \Rightarrow$$

$$OB^r = 1 + \cos^r \alpha = \frac{1}{\sin^r \alpha} \Rightarrow OB = \frac{1}{\sin \alpha} \xrightarrow{\text{OB}} OB = \frac{OA}{\sin \alpha} \Rightarrow$$

$$OB - 1 = AB \Rightarrow AB = \frac{1}{\sin \alpha} - 1 \quad \checkmark$$

(۲)

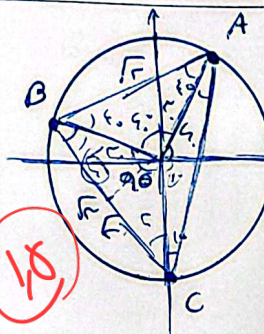


$$\frac{DC}{\sin A} = \frac{AC}{\sin \alpha} \quad \left. \begin{aligned} \frac{AB}{\sin A} = \frac{AB}{\sin(180^\circ - \alpha)} \end{aligned} \right\} \Rightarrow \frac{AC}{\sin \alpha} = \frac{AB}{\sin \alpha} \Rightarrow \frac{AC}{AB} = \frac{1}{\sin \alpha}$$

$$\frac{AB}{\sin A} = \frac{AB}{\sin(180^\circ - \alpha)} \Rightarrow \frac{AB}{\sin \alpha} = \frac{AB}{\sin \alpha} \Rightarrow \frac{AB}{AC} = \sqrt{2}$$

$$\Rightarrow \frac{AC}{AB} = \frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}} \Rightarrow \frac{AB}{AC} = \sqrt{2} \quad \checkmark$$

(۲)



$$\frac{1}{r} = A \text{ طول وتر } \Rightarrow \cos A = 1 \Rightarrow A = 90^\circ$$

$$= B \text{ طول وتر } \Rightarrow \sin B = 1 \Rightarrow B = 90^\circ$$

$$BOA = 90^\circ; OA = OB = OB = OA = 90^\circ$$

$$OBC \Rightarrow B = 90^\circ, C = 90^\circ$$

$$GAC \Rightarrow C = 90^\circ, A = 90^\circ$$

$$AB = \sqrt{2}, BC = \sqrt{2}$$

$$AC = \frac{\sqrt{2} + \sqrt{2}}{2} \quad \checkmark$$

$$\frac{r_1 + r_2 + r_3}{r} = \frac{r_1 + r_2 + r_3}{r} = \frac{r_1 + r_2 + r_3}{r}$$

$$= \frac{r_1 + r_2 + r_3}{r} = \frac{r_1 + r_2 + r_3}{r}$$

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$$= \frac{r_1 + r_2 + r_3}{r} = \frac{r_1 + r_2 + r_3}{r}$$

(۱۵)

$$S_{ABC} = \frac{1}{2} AC \times AB \times \sin A$$

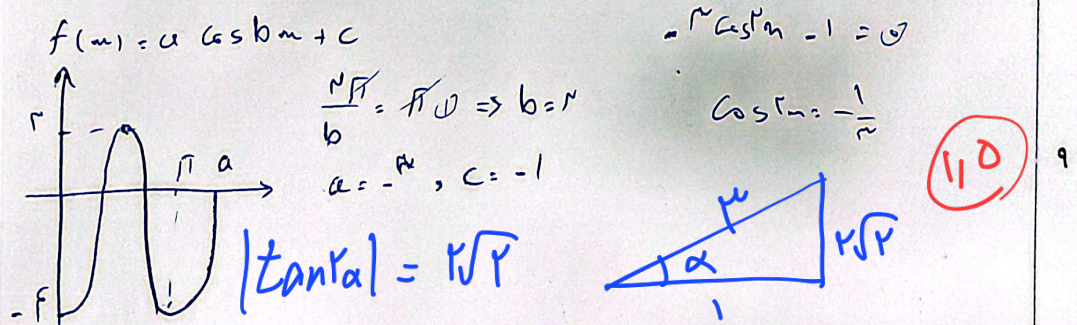
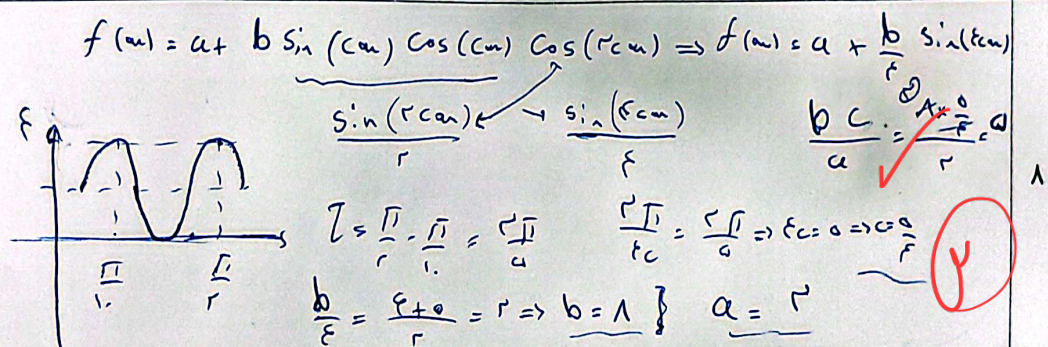
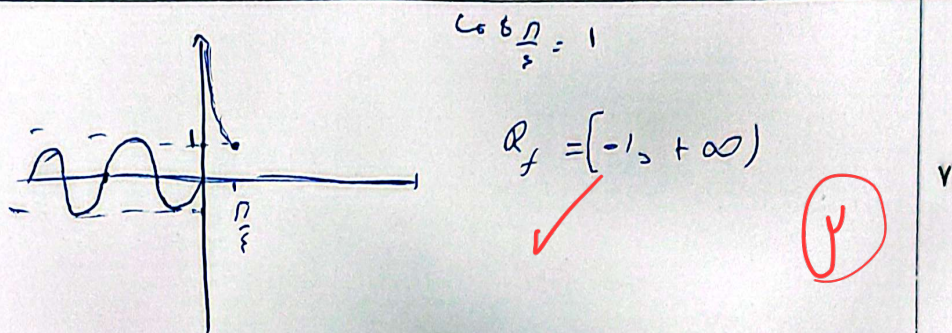
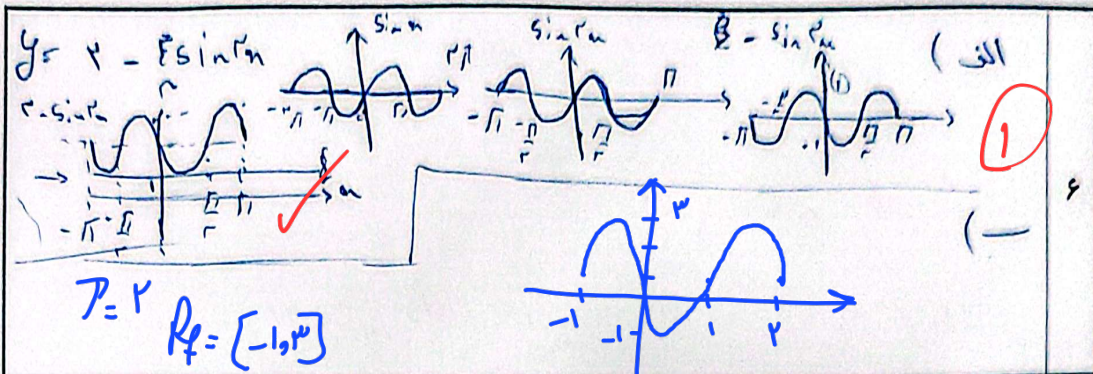
(۲)

$$r \cos^r \alpha - \cos^r \alpha - \sin^r \alpha (-\cos^r \alpha) = \cos^r \alpha (r \cos^r \alpha - 1) - \sin^r \alpha (-\cos^r \alpha)$$

$$= \cos^r \alpha (\cos^r \alpha) + \sin^r \alpha (\cos^r \alpha) \Rightarrow (\sin^r \alpha + \cos^r \alpha) (\cos^r \alpha) = 1 \Rightarrow \cos^r \alpha = 1$$

$$\Rightarrow \sin^r \alpha = 0 \quad \checkmark$$

(۲)



$$f(-w_5, 0) = f(-w_{q+1}, 0) = f(1, 0)$$

$$f(x) = \begin{cases} -\frac{1}{x}x+1 & -1 \leq x \leq 1 \\ x+1 & -1 \leq x \leq 1 \end{cases} \rightarrow f(1,0) = \frac{1}{x}$$