

نام و نام خانوادگی: شماره دانشجویی: تاریخ: 19/10/1397


 $\rightarrow (3, 4) + 9 = 18$ (الف)

$| (3, 4) - (1, 2) | = 2.82$
 $\rightarrow 18 - 2.82 = 15.18$ (ب)


 $\rightarrow 18 - 10 = 8 = |11|$ (ج)

$| (3, 4) - (1, 2) | = 2.82$ (د)

$\frac{\pi}{12} \times 9 = \frac{3\pi}{4}$ (هـ)

$9R + 2R = \frac{\pi}{r} + 9 = \frac{12 + \pi}{r}$ (و)

$\frac{1}{2} \times 12 \times 4 \times \frac{\sqrt{3}}{2} = 12\sqrt{3}$ (ز)

$a = \sqrt{2 \times 4 + 9 - \left(\frac{12 \times 4}{r}\right)} = \sqrt{17} = \sqrt{17}$ (ح)

$A^{\wedge} = 180 - (B^{\wedge} + C^{\wedge}) = 30^{\circ}$
 $\frac{BC}{\sin 30^{\circ}} = \frac{AC}{\sin B} \rightarrow \frac{10}{\frac{1}{2}} = \frac{10\sqrt{3}}{\sin B} \rightarrow \sin B = \frac{\sqrt{3}}{2} \rightarrow B^{\wedge} = 60^{\circ}$
 $C^{\wedge} = 90^{\circ}$

$\frac{0}{180} = \frac{Rad}{\pi} \rightarrow B^{\wedge} = 1.57 \times \frac{\pi}{180} = \frac{\pi}{12}$
 $C^{\wedge} = 1.57 \times \frac{\pi}{180} = \frac{\pi}{12}$

$$\frac{-\tan n + r \tan n}{-\tan n + \tan n} = \frac{r \tan n}{-\tan n} = -r \quad \checkmark \quad (y)$$

$$\frac{\pi}{12} = \frac{p}{12} \Rightarrow p = 10 \quad \frac{\pi}{12} \times \frac{12}{\pi} = 10$$

$$A = \frac{r \tan(\frac{\pi}{4} - 10^\circ) + \tan(\frac{\pi}{4} + 10^\circ)}{r \tan(\pi - 10^\circ) - \tan(\frac{\pi}{4} - 10^\circ)} = \frac{r \cot 10^\circ - \cot 10^\circ}{-r \tan 10^\circ - \cot 10^\circ} =$$

$$\frac{\cot 10^\circ}{-r \tan 10^\circ - \cot 10^\circ} = \frac{\frac{1}{a}}{-\frac{1}{a} - \frac{1}{a}} = \frac{-1}{\frac{1}{a} + 1}$$

$$\sin n - \cos n = r \sin n + r \cos n$$

$$\frac{(\sin n + \cos n)(\sin n \cos n) + (\sin n - \cos n)}{\sin^2 n - \cos^2 n + \sin n \cos n} =$$

$\boxed{\tan^2 n = r}$
 $\uparrow$
 $\sin^2 n = r \cos^2 n$
 $\uparrow$

$$\Rightarrow \sin^2 n + r \sin n \cos n + \cos^2 n + \sin^2 n + \cos^2 n - r \sin n \cos n = r \sin^2 n - r \cos^2 n$$

$$\sin^2 n - r \cos^2 n + 1 = r \sin^2 n + r \cos^2 n - r$$

$$0 = r \sin^2 n + r \cos^2 n - 1 \Rightarrow r = \frac{1}{\cos^2 n} \Rightarrow \cos^2 n = \frac{1}{r} \quad (y)$$

$$\Rightarrow \sin^2 n = \frac{1}{r}$$

$$\sin^2 n - r \cos^2 n + 1 = r(\sin^2 n + \cos^2 n - 1) \Rightarrow \boxed{\tan^2 n = \frac{1}{r}} \quad \checkmark$$

(.)

سوال ٩

$$\frac{(\sin \alpha + \cos \alpha)^2 + (\sin \alpha - \cos \alpha)^2}{\sin^2 \alpha - \cos^2 \alpha} = \mu$$

$$\frac{\sin^2 \alpha + \cos^2 \alpha + \cancel{\mu \sin \alpha \cos \alpha} + \sin^2 \alpha + \cos^2 \alpha - \cancel{\mu \sin \alpha \cos \alpha}}{\sin^2 \alpha - \cos^2 \alpha} = \mu$$

$$\rightarrow \frac{\mu}{\sin^2 \alpha - \cos^2 \alpha} = \mu \xrightarrow{\sin^2 \alpha = 1 - \cos^2 \alpha} \frac{\mu}{1 - \mu \cos^2 \alpha} = \mu \rightarrow \cos^2 \alpha = \frac{1}{3}$$

$$1 + \tan^2 \alpha = \frac{1}{\cos^2 \alpha} \rightarrow \tan^2 \alpha = \infty$$

الف) $\cos(4\alpha, \omega)$

$$\cos^2 \alpha = \frac{1 + \cos 2\alpha}{2}$$

$$\cos^2 2\alpha = \frac{1 + \cos 4\alpha}{2} \rightarrow \cos^2 2\alpha = \frac{1 + \frac{\sqrt{r}}{r}}{2}$$

$$\xrightarrow{\oplus} \cos 4\alpha = \sqrt{\frac{r + \sqrt{r}}{r}} = \frac{\sqrt{r + \sqrt{r}}}{r}$$

سوال ١٠

ب) $\sin(4\alpha, \omega)$

$$\sin^2 \alpha = \frac{1 - \cos 2\alpha}{2}$$

$$\sin^2 2\alpha = \frac{1 - \cos 4\alpha}{2} = \frac{1 - (-\frac{\sqrt{r}}{r})}{2} \rightarrow \sin^2 4\alpha = \frac{1 + \frac{\sqrt{r}}{r}}{2}$$

$$\xrightarrow{\oplus} \sin 4\alpha = \sqrt{\frac{r + \sqrt{r}}{r}} = \frac{\sqrt{r + \sqrt{r}}}{r}$$