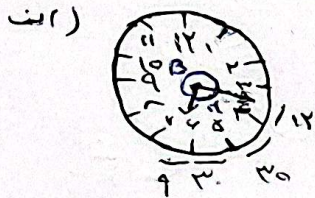


$$d = 4 \times 30 + 3 + 24 = 127^\circ$$

$$B = 127^\circ - 360 - 207$$

ب) $d = |8.8M - 30H| = |8.8 \times 54 - 30 \times 3| = 207^\circ$



$$d = 2 \times 30 + 12 + 9 = 81^\circ$$

$$B = 360 - 81 = 279^\circ$$

ب) $d = |8.8M - 30H| = |8.8 \times 18 - 30 \times 2| = 81^\circ$

الف) $S = \frac{d}{r} R^2 = \frac{R}{\frac{r}{2}} \times \frac{r^2}{9} = \frac{9R}{12} = \frac{3R}{4}$

ب) $P = dR + rR = \frac{R}{4} \times 3 + 2 \times 3 = \frac{3R}{4} + 6 = \frac{R}{4} + 6 = \frac{12+R}{4}$

الف) $S = \frac{1}{r} ab \sin \hat{A} = \frac{1}{\frac{r}{2}} \times \frac{2}{\frac{r}{2}} \times \frac{2}{\frac{r}{2}} \times \frac{\sqrt{3}}{2} = 10\sqrt{3}$

ب) $C B = 5^2 + 8^2 - 2 \times 5 \times 8 \times \frac{1}{2} = 25 + 64 - 40 = 49$

$\hat{B} + \hat{C} = 120^\circ$ $AC = 10\sqrt{2}$ $BC = 10$

$\hat{B} = 1$ $\hat{C} = 1$ $\hat{A} = 180 - (20 + 20) = 140^\circ$

$\frac{10\sqrt{2}}{\frac{1}{2}} = \frac{10\sqrt{2}}{\frac{1}{2}} \times \frac{1}{\sqrt{2}} = \frac{10}{1} = 10$

$\frac{1}{\sin \hat{A}} = \frac{1}{\sin \hat{B}} \Rightarrow \hat{B} = 40^\circ \Rightarrow \hat{C} = 180 - (40 + 40) = 100^\circ$

$\hat{B} = \frac{R}{r}$

$\hat{C} = \frac{R}{r} \times \frac{R}{r} = \frac{VR}{12}$

$$\frac{\tan(\pi - \alpha) + \tan(\pi + \alpha)}{\tan(\pi - \alpha) - \tan(\pi + \alpha)} = \frac{-\tan \alpha + \tan \alpha}{-\tan \alpha - \tan \alpha} = \frac{\tan \alpha}{-\tan \alpha} = \boxed{-1}$$

$$\tan \frac{\pi}{12} = a = \tan 15^\circ$$

$$\frac{\tan 90^\circ + \tan 15^\circ}{\tan 135^\circ - \tan 15^\circ} = \frac{\tan(90 - 15) + \tan(90 + 15)}{\tan(180 - 15) - \tan(180 - 15)} = \frac{\cot 15^\circ - \cot 15^\circ}{\cot 15^\circ - \cot 15^\circ} = \frac{0}{0}$$

$$= \frac{\cot 15^\circ}{-\frac{1}{\cot 15^\circ}} = \frac{1}{a} = \frac{1}{\tan 15^\circ} = \frac{1}{a} = \boxed{\frac{1}{a}}$$

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

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

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

$$\frac{\sin^2 x - r \cos^2 x + 1}{\sin^2 x + r \cos^2 x - 1} = r \quad \tan^2 x = 1 \quad \frac{1 - \cos^2 x - r \cos^2 x + 1}{1 - \cos^2 x + r \cos^2 x - 1} = \frac{r - r \cos^2 x}{r \cos^2 x} = r$$

$$r \cos^2 x = r - r \cos^2 x$$

$$r \cos^2 x = r \Rightarrow \cos^2 x = \frac{r}{r} = 1 \quad \frac{1}{\cos^2 x} = 1 + \tan^2 x \Rightarrow \frac{1}{1} = 1 + \frac{r}{1} = \frac{r}{1} + \frac{0}{1}$$

$$\Rightarrow \tan^2 x = \boxed{\frac{r}{1}}$$

$$\cos(45^\circ) = \frac{1 + \cos 90^\circ}{2} = \frac{1 + \frac{\sqrt{2}}{2}}{2} = \frac{1}{2} + \frac{\sqrt{2}}{4} = \frac{2 + \sqrt{2}}{4}$$

sin, cos از یکدیگر متمم هستند

$$\sin(45^\circ) = \frac{1 - \cos 90^\circ}{2} = \frac{1 - \frac{\sqrt{2}}{2}}{2} = \frac{1}{2} - \frac{\sqrt{2}}{4} = \frac{2 - \sqrt{2}}{4}$$