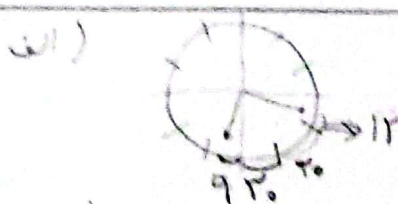


$$(20 \times 2) + 27 + 27 = 103^\circ$$

ب) $|0.0 \times 0.4 - 20 \times 2| = 20.7^\circ$

$$20.7 - 20.7 = 103^\circ$$



$$12 + 9 + 20 + 20 = 11^\circ$$

ب) $|0.0 \times 11 - 20 \times 4| = 11^\circ$

الف) $\frac{aR}{r} = \frac{\frac{\pi}{2} \times 9}{r} = \frac{3\pi}{r}$

ب) $R + R + aR = r + r + 3 \times \frac{\pi}{r} = 4 + \frac{\pi}{r}$

الف) $S_{ABC} = 1 \times 0 \times \frac{1}{r} \times \sin 60^\circ = 20 \times \frac{\sqrt{3}}{r} = 10\sqrt{3}$

ب) $a = \sqrt{1^2 + 0^2 - 1 \times 0 \times \frac{1}{r} \times 2} = \sqrt{1 + 20 - 40} = V$

$$P = a + b + c = V + 1 + 0 = 20$$

$$180 - 100 = 80^\circ = \hat{A} \quad \sin \hat{A} = \frac{1}{r}$$

$$\frac{a}{\sin \hat{A}} = \frac{b}{\sin \hat{B}} \Rightarrow \frac{10}{\frac{1}{r}} = \frac{10\sqrt{3}}{\sin \hat{B}} \Rightarrow \sin \hat{B} = \frac{\sqrt{3}}{r} \Rightarrow \hat{B} = 60^\circ \times \frac{\pi}{r}$$

$$\hat{C} = 180 - 80 = 100^\circ = 60^\circ + 40^\circ = \frac{\pi}{r} + \frac{\pi}{r} = \frac{2\pi}{r}$$

$$\frac{-\tan(a) + r \tan(a)}{-\tan(a) - \tan(a)} = \frac{r \tan(a)}{-r \tan(a)} = -1$$

6

$$\frac{r \tan\left(\frac{\pi}{r} - \frac{\pi}{r}\right) + \tan\left(\frac{\pi}{r} + \frac{\pi}{r}\right)}{r \tan\left(\pi - \frac{\pi}{r}\right) - \tan\left(\frac{r\pi}{r} - \frac{\pi}{r}\right)} = \frac{\frac{r}{a} - \frac{1}{a}}{-ra - \frac{1}{a}} = \frac{\frac{1}{a}}{-\frac{ra^2-1}{a}} = -\frac{1}{ra^2-1}$$

7

$$\cot\left(\frac{\pi}{r}\right) = \frac{1}{a}$$

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

8

$$r = r \sin^r - r \cos^r = r \sin^r - r + r \sin^r \Rightarrow 0 = 4 \sin^r \Rightarrow \sin^r = \frac{0}{4}$$

$$\cos^r = 1 - \sin^r = 1 - \frac{0}{4} = \frac{1}{4} \quad \tan^r = \frac{\sin^r}{\cos^r} = \frac{\frac{0}{4}}{\frac{1}{4}} = 0$$

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

9

$$r - r \sin^r = r \sin^r - 1 \Rightarrow 0 = 4 \sin^r n \Rightarrow \sin^r n = \frac{0}{4}$$

$$\cos^r n = 1 - \sin^r = 1 - \frac{0}{4} = \frac{1}{4} \quad \tan^r = \frac{\frac{0}{4}}{\frac{1}{4}} = \frac{0}{1}$$

$$\cos^r a = \frac{1 + \cos^r a}{r} \Rightarrow \cos^r(r\pi/4) = \frac{1 + \cos^r(\pi/4)}{r} = \frac{1 + \frac{\sqrt{r}}{r}}{r} = \frac{r + \sqrt{r}}{r^2} \Rightarrow \cos^r(r\pi/4) = \frac{\sqrt{r + \sqrt{r}}}{r}$$

$$\sin^r a = \frac{1 - \cos^r a}{r} \Rightarrow \sin^r(r\pi/4) = \frac{1 - \cos^r(\pi/4)}{r} = \frac{1 - (-\frac{\sqrt{r}}{r})}{r} = \frac{r + \sqrt{r}}{r^2} \Rightarrow \sin^r(r\pi/4) = \frac{\sqrt{r + \sqrt{r}}}{r}$$

10