نام و نام خانوادگی ...آرین بطیس... پاسخنامه تشریحی تکلیف شماره ...۱۶... کلاس ...۲...

۱

الف)

$$\frac{27}{180} = \frac{Rad}{\pi}$$

$$27 \times \frac{\pi}{180} = \frac{3}{20}\pi$$

ب)

$$\frac{125}{180} = \frac{Rad}{\pi}$$

$$125 \times \frac{\pi}{180} = \frac{25\pi}{36}$$

ج)

$$\frac{D}{180} = \frac{\frac{5\pi}{12}}{\pi}$$

$$D = \frac{180}{\frac{12}{5}} = 75^\circ$$

د)

$$\frac{D}{180} = \frac{\frac{4\pi}{9}}{\pi}$$

$$D = \frac{180}{\frac{9}{4}} = 80^\circ$$

۲

$$\frac{\frac{125a}{9}}{200} = \frac{D}{180} \longrightarrow D = 12/5a^\circ$$

$$\frac{\frac{a\pi}{8}}{\pi} = \frac{a}{8}^\circ$$

$$10a + 12/5a + \frac{a}{8} = 180$$

$$\downarrow$$

$$22/5a$$

$$45a = 180$$

$$\boxed{a = 4}$$

۳

الف)

$$\frac{1}{2} \times \frac{\sqrt{3}}{2} - \frac{\sqrt{3}}{2} \times \frac{1}{2} - 1 + 2$$

$$= \frac{\sqrt{3}}{4} - \frac{\sqrt{3}}{4} - 1 + 2 = \boxed{1}$$

ب)

$$\frac{\left(\frac{1}{\sqrt{3}}\right)^2 + (1)^2 + (\sqrt{3})^2}{\sqrt{3} - \frac{1}{\sqrt{3}}} = \frac{\frac{1}{3} + 1 + 3}{\frac{3-1}{\sqrt{3}}}$$

$$= \frac{\frac{13}{3}}{\frac{2}{\sqrt{3}}} = \boxed{\frac{13\sqrt{3}}{6}}$$

۴

$$-\frac{1}{2} \times \frac{1}{2} + \frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} = \sin^2\theta$$

$$-\frac{1}{4} + \frac{3}{4} = \sin^2\theta$$

$$\frac{2}{4} = \frac{1}{2} = \sin^2\theta$$

$$\sin\theta = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2} \longrightarrow 45^\circ$$

$$\tan 45^\circ = \frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}} = \boxed{1}$$

۵

$$\frac{2\left(\frac{1}{\sqrt{3}}\right)\left(1 - \left(\frac{1}{\sqrt{3}}\right)^2\right)}{\left(1 - \left(\frac{1}{\sqrt{3}}\right)^2\right)^2} = \tan\theta \longrightarrow \frac{\left(\frac{2}{\sqrt{3}}\right)\left(\frac{2}{3}\right)}{\frac{4}{9}} = \frac{\frac{4}{3\sqrt{3}}}{\frac{4}{9}} = \frac{9}{3\sqrt{3}} = \boxed{\frac{3}{\sqrt{3}} = \frac{3\sqrt{3}}{3}}$$

۶

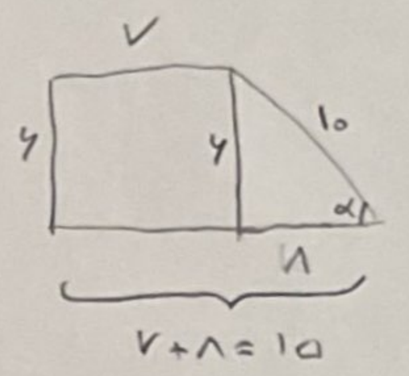
$\sin\theta = a$

$\cos\theta = 1$

$$\frac{۳(a)-۱}{a-۴} = \frac{۱۴}{۱} = \boxed{۱۴}$$

۷

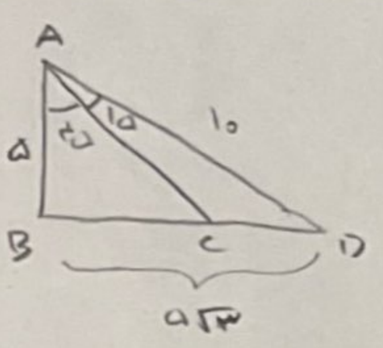
$$\sin\alpha = \frac{۶}{۱۰}$$



$$\sqrt{۱۰^۲-۶^۲} = \sqrt{۶۴} = ۸$$

$$S = ۱۵ + ۷ + ۶ + ۱۰ = \boxed{۳۸}$$

۸



$DAB = ۴۵^\circ + ۱۵^\circ = ۶۰^\circ$

$AB = AD\sin ۳۰^\circ = ۱۰\times\frac{۱}{۲} = ۵$

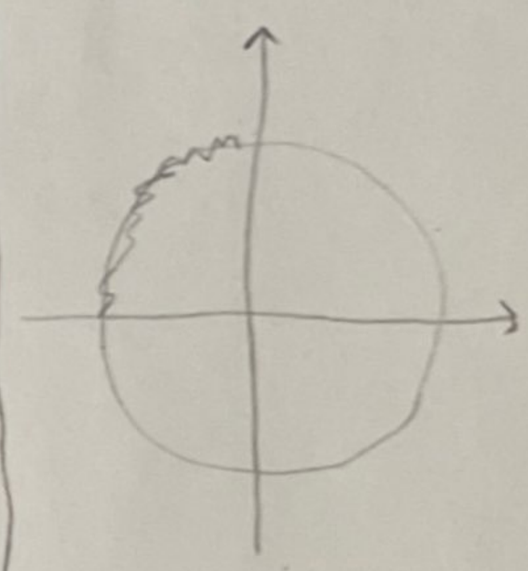
$BD = AD\sin ۶۰^\circ = ۱۰\times\frac{\sqrt{۳}}{۲} = ۵\sqrt{۳}$

$AB = BC \rightarrow BC = ۵$

$BD = BC + CD \rightarrow CD = BD - BC = \boxed{۹\sqrt{۳} - ۵}$

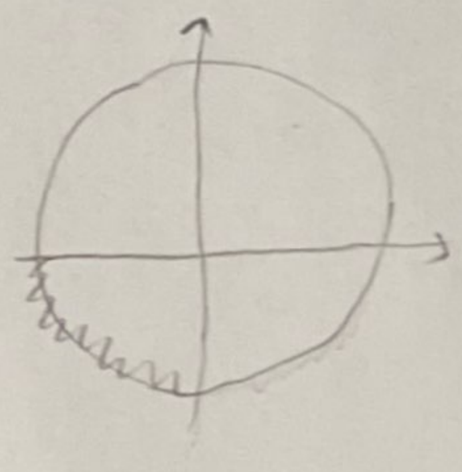
۹

ب)



ناحیه ۲

الف)



ناحیه ۳

۱۰

$\tan x = \frac{۱}{۳}$

$\frac{\sin x}{\cos x} = \frac{۱}{۳}$

$\sin x = \frac{۱}{۳}\cos x$

$\sin^۲ x + \cos^۲ x = ۱$

$(\frac{۱}{۳}\cos x)^۲ + \cos^۲ x = ۱$

$\frac{۱}{۹}\cos^۲ x + \cos^۲ x = ۱$

$\frac{۱۰}{۹}\cos^۲ x = ۱$

$\cos^۲ x = \frac{۹}{۱۰}$

$\cos x = \pm\frac{۳}{\sqrt{۱۰}} \rightarrow \cos x = -\frac{۳}{\sqrt{۱۰}}$

$\sin x = \frac{۱}{۳}\cos x$

$\sin x = (\frac{۱}{۳})(-\frac{۳}{\sqrt{۱۰}}) = \boxed{-\frac{۱}{\sqrt{۱۰}}}$