radius
r? $S = 5$ arc length $\theta = 45^\circ = \frac{\pi}{4}$ central angle

$S = r\theta$

$r = \frac{S}{\theta}$

$= \frac{5}{\frac{\pi}{4}}$ $\frac{4}{\pi}$

$= \frac{20}{\pi}$ unit

Area? $r = 5$ $\theta = 30^\circ = \frac{\pi}{6}$

$Area = \frac{1}{2} r^2 \theta$

$= \frac{1}{2}(25)\frac{\pi}{6}$

$= \frac{25\pi}{12}$ unit^2

---

6 Trig of θ $(-6, -8)$

$2(-3, -4) \longrightarrow 5$

$\sin\theta = -\frac{4}{5}$ $\cos\theta = -\frac{3}{5}$ $\tan\theta = \frac{4}{3}$

$\csc\theta = -\frac{5}{4}$ $\sec\theta = -\frac{5}{3}$ $\cot\theta = \frac{3}{4}$

---

6 Trig $\cos\theta = -\frac{5}{13}$ QII

$(-5, 12) \longrightarrow 13$

$\sin\theta = \frac{12}{13}$ $\cos\theta = -\frac{5}{13}$ $\tan\theta = -\frac{12}{5}$

$\csc\theta = \frac{13}{12}$ $\sec\theta = -\frac{13}{5}$ $\cot\theta = -\frac{5}{12}$

Find missing sides

$B = 30^\circ \quad a = 60 \quad b = 20$

$$\frac{\sin A}{a} = \frac{\sin B}{b}$$

$$\sin A = \frac{60 \sin 30^\circ}{20}$$

$$= 3\left(\frac{1}{2}\right) > 1$$

$\therefore$ No triangle

---

area Δ Area? $a = 3 \quad b = 2 \quad C = 60^\circ$

$$\text{Area} = \frac{1}{2} a b \sin C$$

$$= \frac{1}{2}(3)(2)\sin 60^\circ$$

$$= 3\frac{\sqrt{3}}{2} \text{ unit}^2$$

---

side a: $A = 60^\circ \quad b = 10 \quad c = 20$

$$a = \sqrt{b^2 + c^2 - 2bc\cos A}$$

$$= \sqrt{100 + 400 - 2(10)(20)\cos 60^\circ}$$

$$= \sqrt{500 - 400\left(\frac{1}{2}\right)}$$

$$= \sqrt{300}$$

$$= 10\sqrt{3}$$

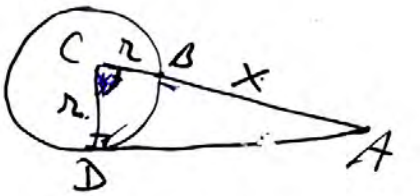
$\sqrt{100} = 10$

3×100

$\sqrt{x\,00\,00\,00} = 100\sqrt{x0}$

$\sqrt[3]{x\,000\,000} = 10\sqrt[3]{x00}$

$C = 45^\circ \qquad r = 14$



$$\cos 45^\circ = \frac{14}{14+x} = \frac{\sqrt{2}}{2}$$

$$1 + 14 = \frac{14(2)}{\sqrt{2}}$$

$$x = \frac{28}{\sqrt{2}} - 14$$

$$14\left(\frac{2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} - 1\right)$$

$$14(\sqrt{2} - 1)$$

$C = 60^\circ \qquad r = 12$

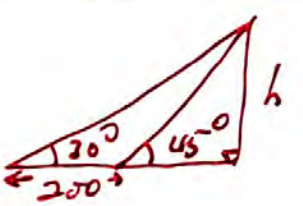
$$\cos 60^\circ = \frac{12}{x+12} = \frac{1}{2}$$

$$24 = x + 12$$

$$x = 12$$

Q.4 #21

$$h = \frac{200 \tan 45^\circ \tan 30^\circ}{\tan 45^\circ - \tan 30^\circ}$$



$$= \frac{200(1)\frac{1}{\sqrt{3}}}{1 - \frac{1}{\sqrt{3}}} \quad \rightarrow \quad = \frac{\frac{200}{\sqrt{3}}}{\frac{\sqrt{3}-1}{\sqrt{3}}}$$

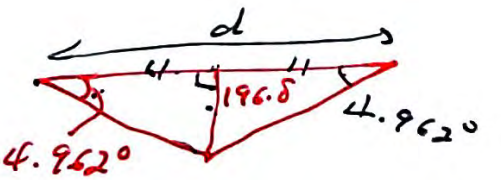
$$= \frac{200}{\sqrt{3}-1}$$

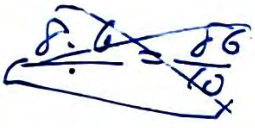
#4-42

$$\tan 4.962^\circ = \frac{196.8}{\frac{1}{2}d}$$

$$d = \frac{2(196.8)}{\tan 4.962^\circ}$$

$$= \frac{393.6}{\tan 4.962^\circ}$$

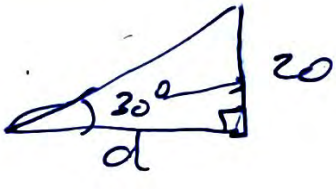




#4.1 #4.2 #4.3

$$\tan 30^\circ = \frac{20}{d} = \frac{1}{\sqrt{3}}$$

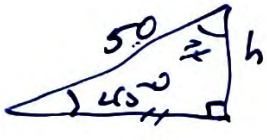
$$d = 20\sqrt{3} \text{ in unit}$$



$$\sin 45^\circ = \frac{h}{50} = \frac{\sqrt{2}}{2}$$

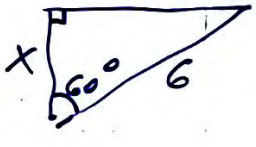
$$h = \frac{50\sqrt{2}}{2}$$

$$= 25\sqrt{2}$$



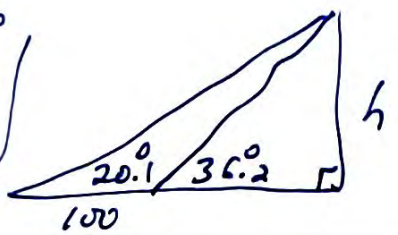
$$\cos 60^\circ = \frac{x}{6} = \frac{1}{2}$$

$$x = 3 \quad \frac{6}{2}$$

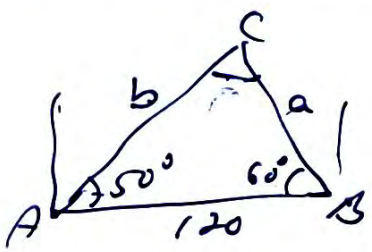


#5

$$h = \frac{100 \tan 36.2^\circ \tan 20.1^\circ}{\tan 36.2^\circ - \tan 20.1^\circ}$$



$$C = 180^\circ - 50^\circ - 60^\circ$$
$$= 70^\circ$$



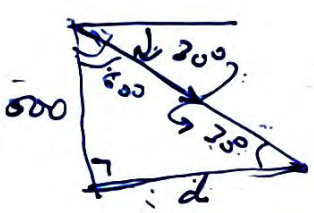
$$\frac{b}{\sin B} = \frac{120}{\sin C}$$

$$b = \frac{120 \sin 60^\circ}{\sin 70^\circ} \quad \sin 60^\circ \to \frac{\sqrt{3}}{2}$$

$$= \frac{60\sqrt{3}}{\sin 70^\circ}$$

$$\tan 60^\circ = \frac{d}{500} = \sqrt{3}$$

$$d = 500\sqrt{3}$$



$$\tan 30^\circ = \frac{500}{d} = \frac{1}{\sqrt{3}}$$

$$d = 500\sqrt{3}$$

$$ADB = 90^\circ - 28^\circ$$
$$= 62^\circ$$

$$D = 180^\circ - 62^\circ$$
$$= 118^\circ$$

$$d = \sqrt{6^2 + 10^2 - 2(6)(10)\cos 118^\circ}$$
$$= \sqrt{136 - 120\cos 118^\circ}$$