Extra questions (set-1)

Q.2 (A) $\sqrt{52}$ units

Q.6 $(-6)^2 - 4 \times 4 \times 3 = 36 - 48 = -12$

Q.15 ~~Sam~~ Colinear

Q.18 Possible out comes $\{(H,H)\ (H,T),\ (T,H),\ (T,T)\}$

$$P(\text{both heads}) = \frac{1}{4}$$

Q.22 OR

$150 = 5^2 \times 2^1 \times 3^1$

$200 = 2^3 \times 5^2$

$LCM = 2^3 \times 3^1 \times 5^2$

$= 8 \times 3 \times 25 = 600.$

Q.23 $\tan(A+B) = \sqrt{3}$, $\Rightarrow \tan(A+B) = \tan 60^\circ$

$\Rightarrow A+B = 60^\circ$ — (1)

$\tan(A-B) = \frac{1}{\sqrt{3}} \Rightarrow \tan(A-B) = \tan 30^\circ$

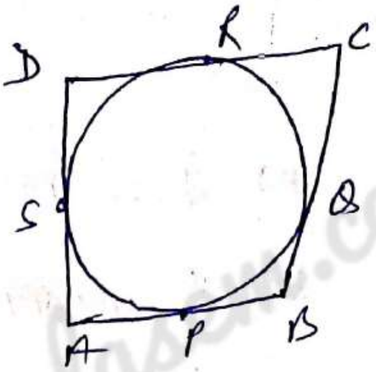
$A-B = 30^\circ$ — (2)

By (1) & (2)

$2A = 90^\circ$

$\Rightarrow A = 45^\circ,\ B = 15^\circ$

Q. 27



AP = AS
BP = BQ
CR = CQ
DR = DS
{ Tangents from ext- point }

By Adding $AP + BP + CR + DR = AS + BQ + CQ + DS$

$\Rightarrow AB + CD = AD + BC$

H.P

Q.31 $S_{14} = 1050$, $a = 10$, $a_{21} = ?$

$\cancel{1050}^{150} = \frac{\cancel{14}^{7}}{\cancel{2}}[20 + 13d]$

$= 150 - 20 = 13d$

$d = 10$

$\therefore a_{21} = a + 20d = 10 + 20 \times 10$
$= 210$

Q.33 $(\text{cosec}A - \sin A)(\sec A - \cos A)$

$= \left(\frac{1}{\sin A} - \sin A\right)\left(\frac{1}{\cos A} - \cos A\right)$

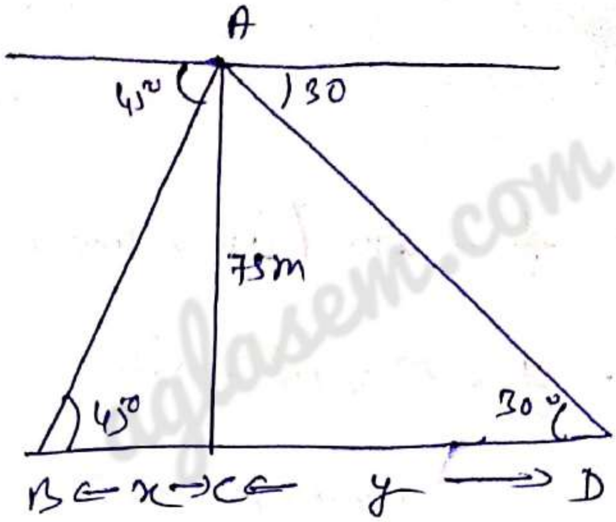
$\Rightarrow \frac{1 - \sin^2 A}{\sin A} \times \frac{1 - \cos^2 A}{\cos A} = \frac{\cos^2 A}{\sin A} \times \frac{\sin^2 A}{\cos A}$

$= \sin A \cos A$

RHS $\frac{1}{\tan A + \cot A} = \frac{1}{\frac{\sin A}{\cos A} + \frac{\cos A}{\sin A}} = \frac{\cos A \sin A}{1}$

$\therefore$ LHS = RHS

Q.36



$\tan 45° = \frac{75}{x}$

$1 = \frac{75}{x}$

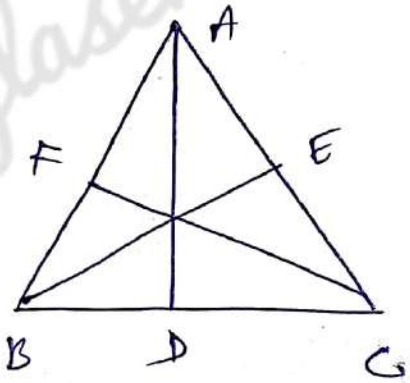
$x = 75m.$

$\tan 30° = \frac{75}{y}$

$\frac{1}{\sqrt{3}} = \frac{75}{y} \Rightarrow y = 75\sqrt{3}$

Total $= 75 + 75\sqrt{3} = 75(1+\sqrt{3})$ m.

Q.37 OR (Part)



$\because$

In $\triangle ABD$

$AB^2 = AD^2 + BD^2 \quad \{\because BD = \frac{1}{2}BC\}$

$\Rightarrow AB^2 = AD^2 + \frac{1}{4}BC^2 \quad \{\because BC = AB\}$

$\Rightarrow 4AB^2 = 4AD^2 + AB^2$

$\Rightarrow 3AB^2 = 4AD^2$ — (1)

Similarly

$3AB^2 = 4BE^2$ — (2)

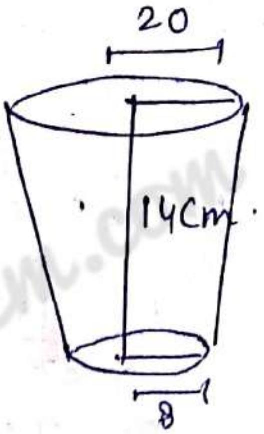
$3AB^2 = 4CF^2$ — (3)

By (1) + (2) + 3

$9AB^2 = 4(AD^2 + BE^2 + CF^2)$

H.P

Q.38 $r_1 = 8$ cm, $r_2 = 20$ cm
$h = 14$ cm.



$V = \frac{1}{3}\pi \times 14\,(64 + 400 + 160)$

$= \frac{1}{\cancel{3}} \times \frac{22}{\cancel{7}} \times \cancel{14}^{2} \times \cancel{624}^{208}$

$= 44 \times 208$ cm^3.

$= 9152$ cm^3