Set - 2 (Extra questions)

Q.5 (A) 2

Q.15 $(1-\cos^2 A)(1+\cot^2 A) = \sin^2 A \times \operatorname{cosec}^2 A = 1$

Q.19 $2\sec 30 \times \tan 60°$

$= 2 \times \frac{2}{\sqrt{3}} \times \sqrt{3} = 4$

Q.23 No. of cubes $= \frac{10^3}{2^3} = \left(\frac{10}{2}\right)^3 = 5^3 = 125$

Q.26

$\because A+B+C = 180$

$B+C = 180-A$

$\cot\left(\frac{B+C}{2}\right) = \cot\left(\frac{180-A}{2}\right) = \cot\left(90-\frac{A}{2}\right)$

$= \tan\frac{A}{2}$

Q.29 $\frac{2\cos^3\theta - \cos\theta}{\sin\theta - 2\sin^3\theta} = \frac{\cos\theta\,(2\cos^2\theta - 1)}{\sin\theta\,(1-2\sin^2\theta)}$

$= \frac{\cot\theta\,[2(1-\sin^2\theta)-1]}{(1-2\sin^2\theta)}$

$= \frac{\cot\theta\,(1-2\sin^2\theta)}{(1-2\sin^2\theta)} = \cot\theta$

Q.31 $870 - 3 = 867$

$258 - 3 = 255$

Req no = HCF (867, 255)

$867 = 255 \times 3 + 102$

$255 = 102 \times 2 + 51$

$102 = 51 \times 2 + 0$

HCF = 51 Ans

Q.33 $a=54$, $d=-3$, $a_n=0$, $n=?$ $S_n=?$

$a_n = a+(n-1)d$

$\Rightarrow 0 = 54+(n-1)(-3) = 18 = n-1$

$= n = 19$

$S_{19} = \frac{19}{2}(54+0) = \frac{19}{2} \times 54^{27} = 513$

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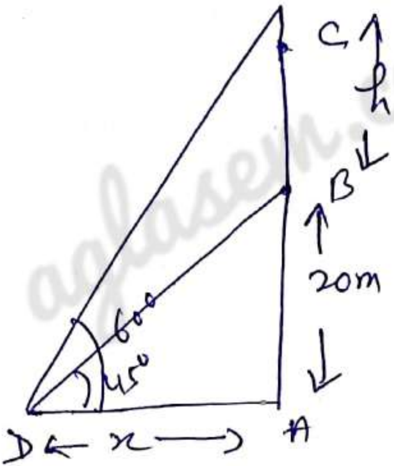


In ΔABD

$\tan 45^\circ = \frac{h}{x}$

$\Rightarrow 1 = \frac{h}{x} \Rightarrow h = x$

In ΔACD

$\tan 60^\circ = \frac{h+20}{x}$

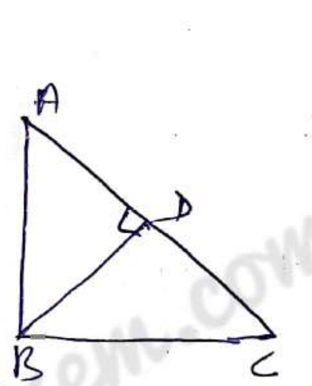
$\Rightarrow \sqrt{3} = \frac{h+20}{h}$ $(\because h=x)$

$\Rightarrow \sqrt{3}h - h = 20$

$h(\sqrt{3}-1) = 20$

$h = \frac{20}{\sqrt{3}-1} = 10(\sqrt{3}+1)\,m$

39 TP: $AC^2 = AB^2+BC^2$



Const: Draw $BD \perp AC$

Proof: $\Delta ABD \sim \Delta ACB$.

$\Rightarrow \frac{AB}{AC} = \frac{AD}{AB} = AB^2 = AC \times AD$ — (1)

Also $\triangle BCD \sim \triangle ACB$

$$\Rightarrow \frac{BC}{AC} = \frac{CD}{BC} \Rightarrow BC^2 = AC \times CD \quad - (2)$$

By (1) + (2)

$$AB^2 + BC^2 = AC \cdot AD + AC \cdot CD$$

$$= AC(AD + CD) = AC \times AC$$

$$= AC^2$$

H.P