CT-4M

Marks-40
4th Nov. '17

9th - CBSE

Section : A

1) $\sqrt[5]{\sqrt[4]{(2^3)^4}} = \sqrt[5]{2^3} = \sqrt[5]{8}$

2) Adjacent angles :- Two angles are called adjacent if (i) They have the same vertex,
(ii) They have a common arm &
(iii) Their non-common arms are on either side of the common arm.

3) Axioms or postulates are the assumptions which are obvious universal truths.

Section : B

4) $a^3 - b^3 = (a-b)(a^2+ab+b^2)$

$= (a-b)\{(a-b)^2 + 3ab\}$

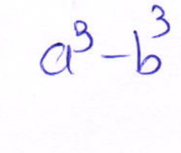
$= 4\{4^2 + 3(45)\}$

$= 4 \times 151$

$a^3 - b^3 = 604$

$\because a-b = 4$, $ab = 45$

5) (i) Abscissa = 3 units
(ii) Ordinate = 4 units
(iii) Coordinates of point P = (3, 4)

6) 

As the diagonals of Rhombus bisects each other at 90°.

$\therefore OB = 2OD$, $\therefore OD = 5$ cm

$\therefore$ By Pythagorus thm, in ΔODA $AD^2 = OA^2 - OD^2$

$= (10)^2 - (5)^2$

$= 100 - 25 = 75$

$\therefore AD^2 = (5\sqrt{3})^2$

$\therefore AD = 5\sqrt{3}$ cm

$\therefore$ Area of the rhombus $= \frac{1}{2} d_1 d_2$

$= \frac{1}{2} (OB)(CA)$

$= \frac{1}{2} \times 10 \times 10\sqrt{3}$ $\quad \because \; CA = 2AD = 2(5\sqrt{3}) = 10\sqrt{3}$

$= 50\sqrt{3}\ cm^2$

Section: C

7) Join DE.

Given: $\angle BAD = \angle EAC$

$\therefore \angle BAD + \angle DAC = \angle EAC + \angle DAC$

$\Rightarrow \angle BAC = \angle DAE$

Now, in ΔABC & ΔADE we have,

$AB = AD$

$\angle BAC = \angle DAE$

& $AC = AE$

$\therefore$ By SAS congruence criterion

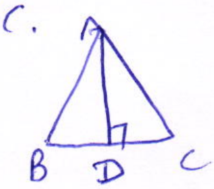
$\Delta ABC \cong \Delta ADE$

$\therefore BC = DE$ $\quad \because$ (CPCT)

OR

7) (i) Let AD be altitude from A on BC.

Suppose, D bisects BC.



i.e. $BD = CD$

To prove: ΔABC is isosceles.

In, ΔADC,

$AD = AD$ $\quad \because$ common side

$\angle ADB = \angle ADC$ $\quad \because$ each $= 90^\circ$

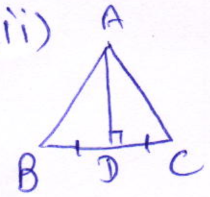
$BD = DC$ $\quad \because$ given

$\therefore$ By SAS criterion we have,

$\Delta ADB \cong \Delta ADC$

$\therefore AB = AC$ $\quad \therefore \Delta ABC$ is isosceles.

(ii)



In ΔADB & ΔADC we have,

$AD = AD$ ∵ (common side

$\angle ADB = \angle ADC$ ∵ each equal to 90°

$BD = DC$ ∵ AD is median.

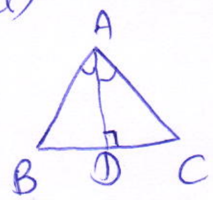
∴ By SAS criterion of congruence,

$\Delta ADB \cong \Delta ADC$

∴ $AB = AC$. (CPCT)

∴ ΔABC is isosceles.

(iii)



let AD Bisects $\angle BAC$.

i.e $\angle BAD = \angle CAD$ —— (i)

Now, in ΔABD & ΔADC we have,

$AD = AD$ (∵ common side)

$\angle BAD = \angle \cancel{B}AC$ ∵ from (i)

$\angle ADB = \angle ADC$ ∵ each $= 90^\circ$

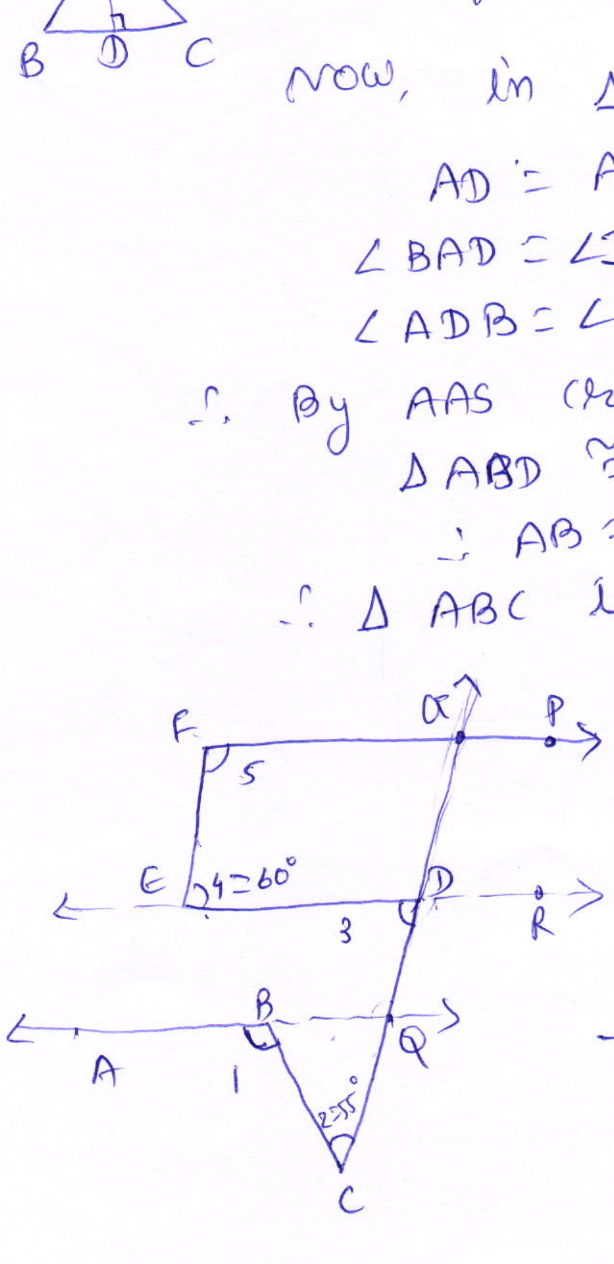
∴ By AAS criterion for congruence we have,

$\Delta ABD \cong \Delta ACD$

∴ $AB = AC$

∴ ΔABC is isosceles.

8)



→ $\angle 5 + \angle 4 = 180^\circ$ ∵ consecutive angles

∴ $\angle 5 = 180^\circ - 60^\circ$

$\boxed{\angle 5 = 120^\circ}$

→ $\angle 5 = \angle DQP$

∴ $\angle DQP = 120^\circ$

But, $\angle DQP = \angle QDR$ ∵ corro. angles

∴ $\angle QDR = 120^\circ$

But, $\angle 3 + \angle QDR = 180^\circ$ ∵ Linear pair of angles

∴ $\boxed{\angle 3 = 60^\circ}$.