Mathematics

REVISION and MODEL QUESTIONS

18) Find the sum of first 22 terms of an AP in which d = 7 and 22nd term is 149.

Soln:- (……….Contd)

Again We know that

$$S_n = \frac{n}{2}[2a + (n-1)d]$$

$$S_{22} = \frac{22}{2}[2(2) + (22-1)7]$$

$$S_{22} = (11)(4 + 147)$$

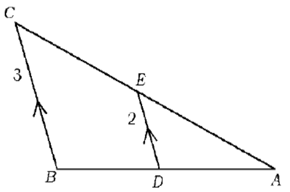
$$S_{22} = (11)(151)$$

$$S_{22} = 1661$$

Hence the sum of first 22 term of the AP is 1661

19)

In the figure, $\Delta ADE \sim \Delta ABC$ and $DE : BC = 2 : 3$. Find $\frac{\text{Area of } \Delta ADE}{\text{Area of } \Delta ABC}$.



Soln:- Δ ADE ~ Δ ABC and

DE : BC = 2 : 3. (given)

$$\frac{\Delta ADE}{\Delta ABC} = \frac{2^2}{3^2}$$

$$\frac{\Delta ADE}{\Delta ABC} = \frac{4}{9}$$

20) The radius of the base and the height of a cylinder and a cone are same. If the volume of the cylinder is 27 cubic units, then find the volume of cone.

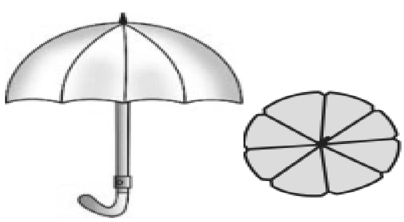
Soln:-

Volume of cone = $\frac{1}{3}$ volume of cylinder

$= \frac{1}{3} \times 27$

= 9 Cubic Units

21) An umbrella has 8 ribs which are equally spaced (see Fig.). Assuming the umbrella to be a flat circle of radius 45 cm, find the area between the two consecutive ribs of the umbrella



Soln:

The radius (r) of the umbrella when flat = 45 cm

So, the area of the circle (A) = πr^2 =

$= (22/7)\times(45)^2 = 6364.29 \text{ cm}^2$

Total number of ribs (n) = 8

∴ The area between the two consecutive ribs of the umbrella = A/n

$= 6364.29/8 \text{ cm}^2$

Or, The area between the two consecutive ribs of the umbrella = 795.5 cm^2

22) If *P* (*x*, 4) is at a distance of 5 units, from the origin, then find the value of '*x*'.

Soln:-

$$d = \sqrt{x^2 + y^2}$$

$$d = \sqrt{x^2 + (4)^2}$$

$$5^2 = x^2 + 4^2$$

$$x^2 = 25 - 16 = 9$$

x = 3 units

23) Find the number of solutions of the pair of linear equations 2*x* – 3*y*+4 = 0 and 3*x* + 5*y* + 8 = 0.

Ans. : $2x - 3y + 4 = 0$

$3x + 5y + 8 = 0$

$$\frac{a_1}{a_2} = \frac{2}{3} \text{ and } \frac{b_1}{b_2} = \frac{-3}{5} \text{ and } \frac{c_1}{c_2} = \frac{4}{8}$$

$$\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$$

∴ Exactly one or unique solution

24) The angles of the triangle are in A. P. The smallest angle is 30^0. Show that the triangle is a right angled triangle.

Soln: Let ABC be a Δle in which A is the smallest angle = 30^0

It is given that the angles of the triangle are in A. P, therefore the angles A, B and C are 30^0, 30^0 + d, 30^0 + 2d respectively.,

The sum of the 3 angles of a triangle is 180^0.

Hence, 300 + 300 + d + 300 + 2d = 180^0

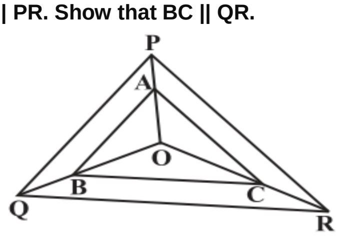
$$\Rightarrow 90^0 + 3d = 180^0$$

$$3d = 180^0 - 90^0$$

$$\therefore d = \frac{90}{3} = 30^0$$

∴ the angles are 30^0, 60^0, 90^0; hence the triangle is a right angled triangle as one of its angle is 90^0.

25) In the figure, A, B and C are points on OP, OQ and OR respectively such that AB || PQ and AC || PR. Show that BC || QR.



Solution:

Given here,

In ΔOPQ, AB || PQ

By using Basic Proportionality Theorem,

$$\frac{QA}{AP} = \frac{OB}{BQ} \text{.................}(1)$$

Also given, (Contd…..)