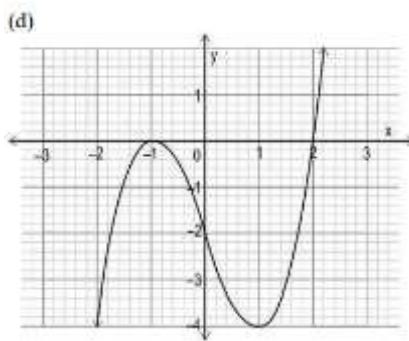
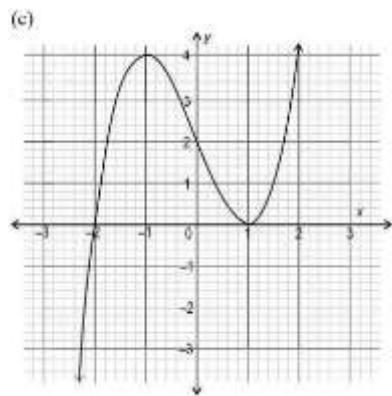
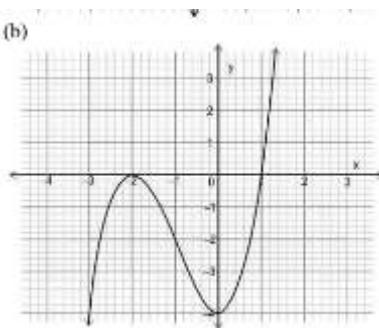
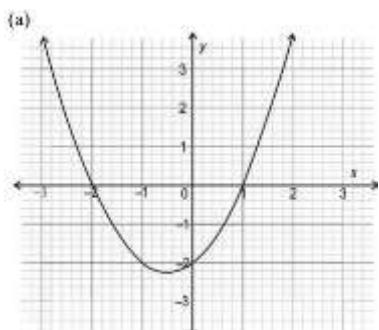
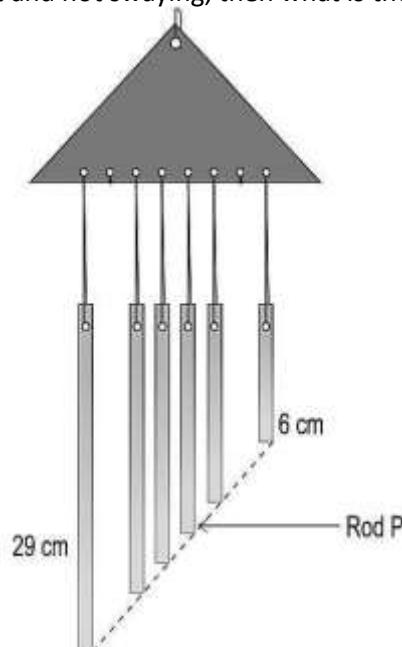


- Q1. Which of the following could be the graph of the polynomial?  $(x - 1)^2(x + 2)$ ?

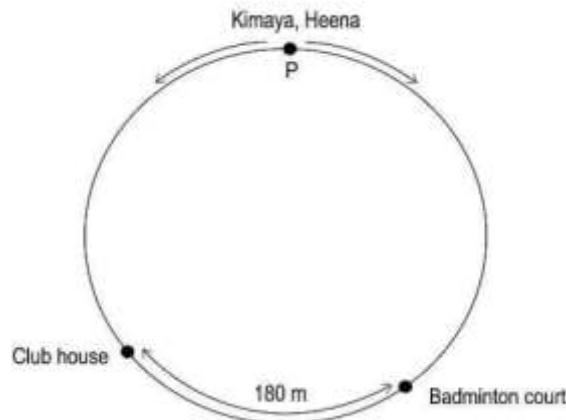


- Q2. Harsha made a wind chime using a frame and metal rods. She punched 8 holes in the frame, each 2 cm apart, and then hung 6 metal rods from the frame, as shown in the figure below. The ends of the metal rods are aligned over a line, shown by the dotted line in the figure. If all of the rods are straight and not swaying, then what is the length of Rod P?

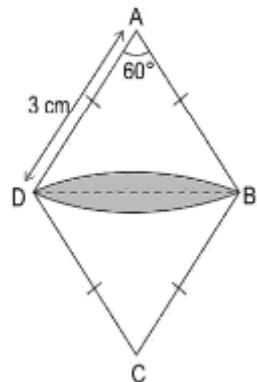


- Q3. Kimaya and Heena started walking from the point P at the same moment in opposite directions on a 800 m long circular path as shown below. Kimaya walked to the club house at an average speed of 100 m/min and Heena walked to the badminton court at an average

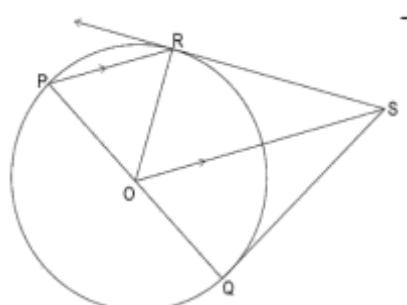
speed of 80 m/min. The length of the circular track between the clubhouse and the badminton court is 180m. If Heena took 1 minute more than Kimaya to reach her destination, find the time taken by Heena to reach the badminton court.



- Q4. ABCD is a rhombus with side 3 cm. Two arcs are drawn from points A and C respectively such that the radius equals the side of the rhombus. The figure is shown below. If BD is a line of symmetry for the figure, then find the area of the shaded part of the figure in terms of  $\pi$ .

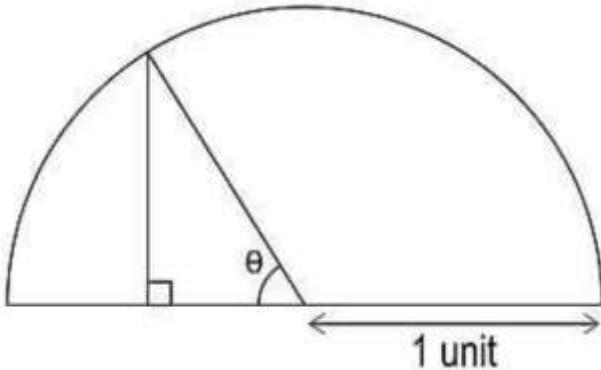


- Q5. (6, 0) and (0, 2) are two of the points of intersections of two lines represented by a pair of linear equations. How many points of intersections does the pair of linear equations have in total? Also, find the equation that represents one of the lines of the above pair.
- Q6. In the given figure, PQ is the diameter of the circle with centre O. R is a point on the boundary of the circle, at which a tangent is drawn. A line segment is drawn parallel to PR through O, such that it intersects the tangent at S. Show that SQ is a tangent to the circle



- Q7. Shown below is a semicircle of radius 1 unit. Make necessary constructions and show that:

$$\tan \frac{\theta}{2} = \frac{\sin \theta}{1 + \cos \theta}$$



- Q8. In a formula racing competition, the time taken by two racing cars A and B to complete 1 round of the track is 30 minutes and  $p$  minutes respectively. If the cars meet again at the starting point for the first time after 90 minutes and the HCF (30,  $p$ ) = 15, then the value of  $p$  is?

Q9. If the sum of first  $n$  odd natural numbers is equal to  $k$  times the sum of first  $n$  even natural numbers, then  $k$  is equal to

(a)  $\frac{n+1}{2n}$       (b)  $\frac{2n}{n+1}$   
(c)  $\frac{n+1}{n}$       (d)  $\frac{n}{n+1}$

Q10. Two cubes each with 6 cm edge are joined end to end. The surface area of the resulting cuboid is?

Q11. A sphere of maximum volume is cut out from a solid hemisphere of radius 7 cm. Then the ratio of the volume of the original hemisphere to that of the cut-out sphere is?

Q12. The distance between two points A and B, on a graph is given as  $\sqrt{10^2 + 7^2}$ . The coordinates of A are (-4,3). Given that the point B lies in the first quadrant, then all the possible  $x$ -coordinates of point B are

(a) multiple of 2      (b) multiple of 3  
(c) multiple of 5      (d) multiple of 6

Q13. I will be adding more questions