8.circle

ee24btech11027- satwikagv

6. The lines $2x - 3y = 5$ and $3x - 4y = 7$ are diameters of a circle having area as 154 sq.units.Then the equation of the circle is **(2003)**
   (a) $x^2 + y^2 - 2x + 2y = 62$
   (b) $x^2 + y^2 + 2x - 2y = 62$
   (c) $x^2 + y^2 + 2x - 2y = 47$
   (d) $x^2 + y^2 - 2x + 2y = 47$
7. If a circle passes through the point (a, b) and cuts the circle $x^2 + y^2 = 4$ orthogonally, then the locus of its centre is **(2004)**
   (a) $2ax - 2by - (a^2 + b^2 + 4) = 0$
   (b) $2ax + 2by - (a^2 + b^2 + 4) = 0$
   (c) $2ax - 2by + (a^2 + b^2 + 4) = 0$
   (d) $2ax + 2by + (a^2 + b^2 + 4) = 4$
8. A variable circle passes through the fixed point $A(p, q)$ and touches x-axis.The locus of the other end of the diameter through $A$is **(2004)**
   (a) $(y - q)^2 = 4px$
   (b) $(x - q)^2 = 4py$
   (c) $(y - p)^2 = 4qx$
   (d) $(x - p)^2 = 4qy$
9. If the lines $2x + 3y + 1 = 0$ and $3x - y - 4 = 0$ lie along diameter of a circle of circumference 10π, then the equation of the circle is **(2004)**
   (a) $x^2 + y^2 + 2x - 2y - 23 = 0$
   (b) $x^2 + y^2 - 2x - 2y - 23 = 0$
   (c) $x^2 + y^2 + 2x + 2y - 23 = 0$
   (d) $x^2 + y^2 - 2x + 2y - 23 = 0$
10. intercept on the line $y = x$ by the circle $x^2 + y^2 - 2x = 0$ is AB.Equation of the circle on AB as a diameter is **(2004)**
   (a) $x^2 + y^2 + x - y = 0$
   (b) $x^2 + y^2 - x + y = 0$
   (c) $x^2 + y^2 + x + y = 0$
   (d) $x^2 + y^2 - x - y = 0$
11. If the circles $x^2 + y^2 + 2ax + cy + a = 0$ and $x^2+y^2-3ax+dy-1 = 0$ intersect in two distinct points P and Q then the line $5x + by - a = 0$passes through P and Q for **(2005)**
   (a) exactly one value of a
   (b) no value of a
   (c) infinitely many values of a
   (d) exactly two values of a
12. A circle touches the x-axis and also touches the circle with centre at $(0, 3)$ and radius 2. The locus of the centre of the circle is **(2005)**
   (a) an ellipse
   (b) a circle
   (c) a hyperbola
   (d) a parabola
13. If a circle passes through the point (a, b) and cuts the circle $x^2 + y^2 = p^2$ orthogonolly, then the equation of the locus of its centre is **(2005)**
   (a) $x^2 + y^2 - 3ax - 4by + (a^2 + b^2 - p^2) = 0$
   (b) $2ax + 2by - (a^2 - b^2 + p^2) = 0$
   (c) $x^2 + y^2 - 2ax - 3by + (a^2 - b^2 - p^2) = 0$
   (d) $2ax + 2by - (a^2 + b^2 + p^2) = 0$
14. If the pair of lines $ax^2 + 2(a + b)xy + by^2 = 0$ lie along diameters of a circle and divide the circle into four sectors such that the area of one of the sectors is thrice the area of another sector then **(2005)**
   (a) $3a^2 - 10ab + 3b^2 = 0$
   (b) $3a^2 - 2ab + 3b^2 = 0$
   (c) $3a^2 + 10ab + 3b^2 = 0$
   (d) $3a^2 + 2ab + 3b^2 = 0$
15. If the lines $3x - 4y - 7 = 0$ and $2x - 3y - 5 = 0$ are two diameters of a circle of area 49π square units, the equation of the circle is **(2006)**
   (a) $x^2 + y^2 + 2x - 2y - 47 = 0$
   (b) $x^2 + y^2 + 2x - 2y - 62 = 0$
   (c) $x^2 + y^2 - 2x + 2y - 62 = 0$

(d) $x^2 + y^2 - 2x + 2y - 47 = 0$

16. Let C be the circle with centre $(0, 0)$ and radius 3 units.The equation of the locus of the mid points of the chords of the circle C that subtend an angle of $\frac{2\pi}{3}$ at its centre is

(2006)

(a) $x^2 + y^2 = \frac{3}{2}$
(b) $x^2 + y^2 = 1$
(c) $x^2 + y^2 = \frac{27}{4}$
(d) $x^2 + y^2 = \frac{9}{4}$

17. Consider a family of circles which are passing through the point $(-1, 1)$, and are tangent to x-axis.If (h, k) are the coordinate of the centre of the circles, then the set of values of k is given by the interval

(2007)

(a) $\frac{-1}{2} \leq k \leq \frac{1}{2}$
(b) $k \leq \frac{1}{2}$
(c) $o \leq k \leq \frac{1}{2}$
(d) $k \geq \frac{1}{2}$

18. The point diametrically opposite to the point $P(1, 0)$ on the circle $x^2 + y^2 + 2x + 2y - 3 = 0$ is

(2008)

(a) (3,-4)
(b) (-3,4)
(c) (-3,-4)
(d) (3,4)

19. The differential equation of the family of circles with fixed radius 5 units and centre on the line $y = 2$ is

(a) $(x - 2)y'^2 = 25 - (y - 2)^2$
(b) $(y - 2)y'^2 = 25 - (y - 2)^2$
(c) $(y - 2)^2y'^2 = 25 - (y - 2)^2$
(d) $(x - 2)^2y'^2 = 25 - (y - 2)^2$

20. If P and Q are the points of intersection of the circles $x^2 + y^2 + 3x + 7y + 2p - 5 = 0$ and $x^2 + y^2 + 2x + 2y - p^2 = 0$ then there is a circle passing through P,Q and (1,1) for:

(2009)

(a) all except one value of p
(b) all except two values of p
(c) exactly one value of p
(d) all value of p