THE GURUKUL INSTITUTE

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D.P.P OF MATHEMATICS- CIRCLE

PARAMETRIC Equation Of a CIRCLE

1.Find the centre and the radius of the circle $3x^2+3y^2-8x-10y+3=0$.

2.Find the equation of the circle with centre (1,2) which passes through the point(4,6).

3.A circle has radius 3 units and its centre lies on the line y= x – 1. Find the equation of the circle if it passes through(7,3).

4.Find the equation of the circle whose diameter is the line points (-4,3) and (12, -1). Find also the intercept made by it on the y- axis.

5.Find the equation of the circle passing through (1,1),(2,-1) and(3,2).

6.(i) Prove that the radii of the circles $x^2+y^2=1$,$x^2+y^2-2x-6y-6=0$ and $x^2+y^2-4x-12y-9=0$ are in AP.

(ii)Find the equation of the circle whose centre is (3,-1) and which cuts off an intercept of length 6 from the line 2x – 5y+18=0.

(iii)If y=2x is a chord of the circle $x^2+y^2-10x=0$, find the equation of a circle with this chord as diameter.

(iv) Discuss the position of the points (1,2) and (6,0) with respect to the circle $x^2+y^2-4x+2y-11=0$.

CHORD OF CONTACT

7.Find the equation of the circle whose centre is (3,4) and which touches the line 5x+12y=1.

8. Find the co- ordinates of the point from which tangents are drawn to the circle $x^2+y^2-6x-4y+3=0$ such that the mid- point of its chord of contact is (1,1).

9.(i)Prove that the tangent to the circle $x^2+y^2=5$ at the point (1,-2) also touches the circle $x^2+y^2-8x+6y+20=0$ and find its point of contact.

(ii)Find the equation of the chord of the circle $x^2+y^2-4x=0$ which is bisected at the point (1,1)

(iii)The equations of two circles are $x^2+y^2+2\lambda x+5=0$ and $x^2+y^2+2\lambda y+5=0$. P is any point on the line x – y=0. If PA and PB are the lengths of the tangent from P to the circles and PA=3 then find PB.

(iv) Prove that chord of contact of the pair of tangents to the circle $x^2+y^2=1$ drawn from any point on the line 2x+y=4 passes through a fixed point. Also, find the coordinates of that point.

Equation of RADICAL AXIS & Family Of Circles

10.Find the equation of the circle described on the common chord of the circles $x^2+y^2-4x-5=0$ and $x^2+y^2+8y+7=0$ as diameter.

11.The line Ax+By+C=0 cuts the circle $x^2+y^2+ax+by+c=0$ in P and Q. The line A'x+B'y+C'=0 cuts the circle $x^2+y^2+a'x+b'y+c'=0$ in R and S. If P,Q,R,S are concyclic prove that $\begin{vmatrix} a-a' & b-b' & c-c' \\ A & B & C \\ A' & B' & C' \end{vmatrix} = 0$

12.Show that the circle passing through the origin and cutting the circles $x^2+y^2-2a_1x-2b_1y+c_1=0$ and $x^2+y^2-2a_2x-2b^2y+c_2=0$ orthogonally is $\begin{vmatrix} x^2+y^2 & x & y \\ c_1 & a_1 & b_1 \\ c_2 & a_2 & b_2 \end{vmatrix} = 0$.

13.(i)Show that the circle on the chord $x\cos\alpha+y\sin\alpha-p=0$ of the circle $x^2+y^2=a^2$ as diameter is $x^2+y^2-a^2-2p(x\cos\alpha+y\sin\alpha-p)=0$.

(ii)Tangents PQ and PR are drawn to the circle $x^2+y^2=a^2$ from the point P (x_1,y_1). Prove that equation of the circum circle of ΔPQR is $x^2+y^2-xx_1-yy_1=0$.

(iii)Find the equation of the circle through the intersection of the circles $x^2+y^2-8x-2y+7=0$ and $x^2+y^2-4x+10y+8=0$ and passing through the point (-1,-2).

(iv)A circle passes through (2,1) and x+2y=1 is a tangent to it at (3,-1).Find its equation.

External and Internal Contacts of Circles

14.Examine whether the two circles $x^2+y^2-2x-4y=0$ and $x^2+y^2-8y-4=0$ touch each other externally or internally.

15. Find all the common tangents to the circle $x^2+y^2-2x-6y+9=0$ and $x^2+y^2+6x-2y+1=0$.

16. Find the number of common tangents to the circles.

(i) $x^2+y^2+2x+8y-23=0$ and $x^2+y^2-4x-10y+19=0$,

(ii) $x^2+y^2-4=0$ and $x^2+y^2-6x-8y-24=0$.

PROBLEMS

1.Two circles each of radius 5 units touch each other at (1,2).If the equation of their common tangent is 4x+3y=10. Find the equation of the two circles.

2.The abscissa of two points A and B are the roots of the equation $x^2+2ax-b^2=0$ and their ordinates are the roots of the equation $x^2+2px-q^2=0$. Find the equation and the radius of the circle with AB as diameter.

3.Find the equation of the circle with centre on the line 2x+y=0 and touching 4x – 3y+10=0, 4x – 3y – 30=0.

4.One of the diameters of the circle circumscribing the rectangle ABCD is 4y = x+7. If A and B are (-3,4) ,(5,4), find the area of the rectangle.
5. Find the locus of the mid-points of the circle $x^2+y^2-2x-6y-10=0$ which pass through the orign.
6. The centre of the circle S=0 lies on the line 2x – 2y+9=0 and S=0 cuts orthogonally the circle $x^2+y^2=4$. Show that S=0 passes through two fixed points and find their coordinates.
7.Find the equation of the circle through the points of intersection of the circle $x^2+y^2-4x-6y-12=0$ and $x^2+y^2+6x+4y-12=0$ and cutting the circle $x^2+y^2-2x-4=0$ orthogonally.
8.Find the equations of the tangents from the point A(3,2) to the circle $x^2+y^2=4$ and hence find the angle between the pair of tangents.
9.The chord of contact of the circle $x^2+y^2=b^2$ is generated by a point on the circle $x^2+y^2=a^2$ and the chord of contact touches the circle $x^2+y^2=c^2$. Prove that a,b,c are in G.P.
10. A circle of constant radius 'r' passes through the origin and meets the coordinate axes at points A and B respectively. Find the locus of the centroid of triangle OAB, 'O' being the origin.

OBJECTIVE

1.A,B,C,D are the points of intersection with the coordinate axes of the lines ax+by=ab and bx+ay=ab. Then
a) A,B,C,D are concyclic b) A,B,C,D forms a parallelogram
c) A,B,C,D forms a rhombus d) none of these
2.If two circles $(x-1)^2+(y-3)^2=r^2$ and $x^2+y^2-8x+2y+8=0$ intersect in two distinct points then
a) 2<r<8 b) r<2 c) r=2 d) r>2
3.If a circle passes through the point (a,b) and cuts the circle $x^2+y^2=K^2$ orthogonally then the equation of the locus of its centre is
a) $2ax+2by-(a^2+b^2+K^2)=0$ b) $2ax+2by-(a^2-b^2+K^2)=0$
c) $x^2+y^2-3ax-4by+(a^2+b^2-K^2)=0$ d) $x^2+y^2-2ax-3by+(a^2-b^2-K^2)=0$
4.If the lines 2x – 3y – 5=0 and 3x – 4y=7 are diameters of a circle of area 154 square units, then the equation of the circle is
a) $x^2+y^2+2x-2y-62=0$ b) $x^2+y^2+2x-2y-47=0$
c) $x^2+y^2-2x+2y-47=0$ d) $x^2+y^2-2x+2y-62=0$
5.The common chord of $x^2+y^2-4x-4y=0$ and $x^2+y^2=16$ subtends at the origin an angle equal to
a) π/6 b) π/4 c) π/3 d) π/2
6.The equation of the circle whose diameter is the common chord of the circles $x^2+y^2+3x+2y+1=0$ and $x^2+y^2+3x+4y+2=0$ is
a) $x^2+y^2+8x+10y+2=0$ b) $x^2+y^2-5x+4y+7=0$ c) $2x^2+2y^2+6x+2y+1=0$ d) none of these
7.Equation of a circle with centre (4,3) touching the circle $x^2+y^2=1$ is
a) $x^2+y^2-8x-6y-9=0$ b) $x^2+y^2-8x-6y+11=0$ c) $x^2+y^2-8x-6y-11=0$ d) $x^2+y^2-8x-6y+9=0$
8.If the tangent at a point P on the circle $x^2+y^2+6x+6y=2$ meets the straight line 5x – 2y+6=0 at a point on the y- axis, then the length of the PQ is
a) 4 b) $2\sqrt{5}$ c) 5 d) $3\sqrt{5}$
9.The number of common tangents that can be drawn to the circles $x^2+y^2-4x-6y-3=0$ and $x^2+y^2+2x+2y+1=0$ is
a) 1 b) 2 c) 3 d) 4
10.The tangents drawn from the origin to the circle $x^2+y^2-2rx-2hy+h^2=0$ are perpendicular if
a) $h=\pm 2r$ b) $h=\pm r$ c) $r^2+h^2=1$ d) none of these

ASSIGNMENTS

SECTION – I

PART – A(Level-1)

1.Find the equation of the circle:
(i) centered at (3, -2) with radius 4.
(ii) with end points of the diameter as (2,-1) and (3,2).
(iii) with parametric co- ordinates $x= -3+4\cos\theta$, $y=4+4\sin\theta$.
(iv) passing through three points (0,2),(3,0) and (3,2).
(v) passing through the points (1,1),(-1,2) and whose centre lies x+2y=1.
(vi)passing through the origin and centre lies on the point of intersection of the lines 2x+y=3 and 3x+2y=5.
2.Find the equation of the circle passing through the centre of the circle $x^2+y^2-4x-6y=8$ and being concentric with the circle $x^2+y^2-2x-8y=5$.
3.Find the equation of the circle whose centre is the point (1,-3), and which touches the line 2x – y – 4=0.
4.Find the equation of the circle whose centre is in the first quadrant, and radius 4, given that it touches the x-axis and the line 4x – 3y=0
5.Find the equations of the circles which pass through the origin and cut off intercepts a and b respectively from the x and y-axes.
6.Find the equation of the circle which passés through the point (-2,1) and is tangent to the line 3x – 2y – 6=0 at the point (4,3).
7.Find the equation of those tangents to the circle $x^2+y^2-2x-4y-4=0$ which are parallel to the line 3x – 4y – 1=0.

8.Find the equation to the tangent at A to the circle $(x-a)^2+(y-b)^2=r^2$, where the radius through a makes an angle α with the x – axis.

9.(i)Find the locus of mid-points of the chords to the circle $(x-3)^2+(y-2)^2=1$ passing through the point (3,7).

(ii)Find the value of r^2 for which the line px+qy+r=0 touches the circle $x^2+y^2=a^2$.

10. (i)Through the origin chords are drawn to the circle $(x-1)^2+y^2=1$.Find the equation of the locus of the mid points of these chords.

(ii)Find the locus of the middle points of the chords of the circle $4x^2+4y^2-12x+4y+1=0$ that subtend an angle of $2\pi/3$ at its centre.

LEVEL – II

1.(i)The tangent from P to the circle $x^2+y^2=1$ is perpendicular to the tangent from p to the circle $x^2+y^2=3$. Show that the locus of P is a circle.

(ii)If the tangents be drawn to the circle $x^2+y^2=12$ at its points of intersection, with the circle $x^2+y^2-5x+3y-2=0$, find the coordinates of the point of intersection of the tangents.

2.Find the equation of the circle which passes through the origin, has its centre on the line x+y=4, and cuts $x^2+y^2-4x+2y+4=0$ orthogonally.

3.AB is the diameter of a circle, CD is a chord parallel to AB and 2 CD =AB. The tangent at B meets the line AC produced at E. Prove that AE=2AB.

4.(i)Show that the locus of a point such that the ratio of its distance from two given points is constant, is a circle. Hence show that the circle cannot pass through the given points.

(ii)If a straight line through C $(-\sqrt{8},\sqrt{8})$ making an angle of 135^0 with the x axis cuts the circle $x=5\cos\theta$,$y=\sin\theta$, in points A and B, find the length of the segment AB.

5.Find the locus of the point of intersection of tangents to the circle $x=a\cos\theta$, $y=a\sin\theta$ at the points whose parametric angles differ by (i) $\pi/3$, (ii) $\pi/2$.

6.Let $2x^2+y^2-3xy=0$ be the equation of a pair of tangents drawn from the origin O to a circle of radius 3 with centre in the first quadrant. If A is one of the points of contact, find the length of OA.

7.(i) Find the area of the triangle formed by the tangents from the point (4,3) to the circle $x^2+y^2=9$ and the length of the line joining their points of contact.

(ii) If $(m_i, 1/m_i)$ = 1,2,3,4 are 4 distinct points on a circle, then show that $m_1.m_2.m_3.m_4=1$.

8.The circle $x^2+y^2=a^2$ cuts off an intercept on the straight line lx+my=1 which subtends an angle of 45^0 at the origin. Show that $a^2(l^2+m^2)=4-2\sqrt{2}$.

9.Find the coordinates of the points at which the circles $x^2+y^2-4x-2y=4$ and $x^2+y^2-12x-8y=12$ touch each other. Find the equation of the common tangent at the point of contact.

10.(i)A variable chord is drawn through the origin to the circle $x^2+y^2-2ax=0$. Find the locus of the centre of the circle drawn on this chord as diameter.

(ii)Prove that the circle $x^2+y^2+2g_1x+2f_1y+c_1=0$ will bisect the circumference of the circle $x^2+y^2+2g_2x+2f_2y+c_2=0$ if $2g_2(g_1-g_2)+2f_2(f_1-f_2)+c_2-c_1=0$.

11.Let A be the centre of the circle, $x^2+y^2-2x-4y-20=0$.Suppose that the tangents at the points B(1,7) and D(4,-2) on the circle meet at the point C. Find the area of the quadrilateral ABCD.

12.A variable circle passes through the point A (a,b) and touches the x- axis. Show that the locus of the other end of the diameter through A is $(x-a)^2=4by$.

13.Show that the equation $x^2+y^2-2x-2ay-8=0$ represents for different values of 'a' a system of circles passing through two fixed points A, B on the x – axis and find the equation of that circle of the system, the tangents to which at A,B meet on the line x+2y+5=0.

14.Find the locus of the mid-point of chord of the circle $x^2+y^2=9$ such that segment intercepted by the chord on the curve $y^2-4x-4y=0$ subtends the right angle at the origin.

15.Two concentric circles have centres at (1,2) and radii r and 2r. The circle $x^2+y^2+2x-7y-2=0$ cuts these circles such that the common chord with one of the circles is a tangent to the other. Find the equation of both the circles.

PART – B

(Multi Choice Questions)

1.The locus of the centre of a circle of radius 2 which rolls on the outside of the circle $x^2+y^2+3x-6y-9=0$ is

a)$x^2+y^2+3x-6y+5=0$ b)$x^2+y^2+3x-6y-31=0$ c)$x^2+y^2+3x-6y+22/4=0$ d) none of these

2.The circle described on the line joining the points (0,1),(a,b) as diameter cuts the x-axis at points whose abscissa are root of the equation

a)$x^2+ax+b=0$ b) $x^2-ax-b=0$ c)$x^2+ax-b=0$ d) $x^2-ax-b=0$

3.Four distinct points (2K,3K), (1,0),(0,1) and (0,0) lie on a circle for

a) all integral values of K b) 0<K<1 c) K<0 d) one value of K

4.A square in inscribed in the circle $x^2+y^2-2x+4y-93=0$ with its sides parallel to the co-ordinate axes.The co-ordinates of its vertices are:

a)(-6,-9),(-6,5),(8,-9),(8,5) b) (-6,9),(-6,-5),(8,-9),(8,5) c)(-6,-9),(-6,5),(8,9),(8,5)
d) (-6,-9),(-6,5),(8,-9),(8,-5)

5.A line is drawn through a fixed point P (α,β) to cut the circle $x^2+y^2=r^2$ at A and B. Then PA × PB is equal to
a) $(\alpha+\beta)^2 - r^2$ b)$(\alpha - \beta)^2 + r^2$ c) $\alpha^2+\beta^2 - r^2$ d) none of these

6. The centre of a circle passing through the points (0,0) , (1,0) and touching the circle $x^2+y^2=9$ is
a) (3/2, 1/2) b)(1/2, 3/2) c) (1/2, 1/2) d)(1/2, -√2)

7.One of the diameter of the circle $x^2+y^2 - 12x+ 4y+6=0$ is given by,
a) x+y=0 b) x+3y=0 c) x=y d) 3x+2y=0

8. The length of the chord cut off by y= 2x+1 from the circle $x^2+y^2=2$ is
a)5/6 b) 6/5 c)6/√5 d) √5/6

9. The coordinates of middle point of the chord $2x - 5y+18=0$ cut of by the circle $x^2+y^2 - 6x+ 2y - 54=0$ is
a) (1,4) b)(2,4) c)(4,1) d) (1,1)

10.If the circles $x^2+y^2+2x+2ky+6=0$ and $x^2+y^2+2ky+k =0$ intersect orthogonally then k equals
a) 2 or -3/2 b) -2 or -3/2 c) 2 or 3/2 d) -2 or 3/2

11. If the line $a_1x+b_1y+c_1=0$ and $a_2x+ b_2y+c_2=0$ cut the co- ordinate axes in concyclic points then
a)$a_1a_2=b_1b_2$ b) $a_1b_1=a_2b_2$ c)$a_1b_2=a_2b_1$ d) none of these

12.If a circle passes through the points of intersection of the co-ordinate axes with the line $\lambda x - y+1=0$ and $x - 2y+3=0$ then the value of λ is
a) 3 b) 1/3 c) 6 d) none of these

13.Area of a triangle formed by the positive x-axis and the normal and tangent to the circle $x^2+y^2=4$ at the point $(1,\sqrt{3})$ is
a)$4\sqrt{3}$ b) $2\sqrt{3}$ c) $\sqrt{3}$ d) none of these

14.The condition that the chord $x\cos\alpha + y \sin\alpha - p=0$ of $x^2+y^2 - a^2=0$ may subtend a right angle at the centre of the circle is
a)$a^2=2p^2$ b)$p^2=2a^2$ c) a=2p d)p=2a

15.If the distances from the origin of the centre of three circles $x^2+y^2+2\lambda_i x - c^2=0$ (i=1,2,3) are in G.P., then the lengths of the tangents drawn to them from any point on the circle $x^2+y^2=c^2$ are in
a)A.P. b)G.P. c)H.P. d) none of these

16.The co-ordinates of the point on the circle $x^2+y^2 - 12x - 4y+30=0$ which is farthest from the origin are
a) (9,3) b) (8,5) c) (12,4) d) none of these

17.A circle touches the x- axis and also touches the circle with centre(0,3) and radius 2. The locus of the centre of the circle is
a) a circle b) a Parabola c) an Ellipse d) a Hyperbola

18.The length of the tangent to the circle $x^2+y^2 - 2x - y=23$ from the point (-1,-3) is
a) 8 b)√8 c) √12 d) none of thes

19.AB is diameter of a circle and 'C' is any point on the circumference of the circle. Then
a) the area of ΔABC is maximum when it is isosceles
b) the area of ΔABC is minimum when it is equilateral
c) the perimeter of ΔABC is maximum when it is right angled
d) none of these

20.If (2,5) is an interior point of the circle $x^2+y^2 - 8x - 12y+P=0$ and the circle neither cuts nor touches any one of the co-ordinate axes then:
a) Pϵ(36,47) b)Pϵ(16,47) c)Pϵ(16,36) d) none of these

21.The centre of a set of circles, each of radius 3, lie on the circle $x^2+y^2=25$. The locus of any point in the set is
a) $4\le x^2+y^2\le 64$ b) $x^2+y^2\le 25$ c) $x^2+y^2\ge 25$ d) $3\le x^2+y^2\le 9$

22.The radius of the circle passing through the point (6,2) and having x+y=6 as its normal and x+2y=4 as its diameter is
a) 10 b)$2\sqrt{5}$ c)$5\sqrt{2}$ d) $4\sqrt{5}$

23.The locus of the mid points of the chords of the circle $x^2+y^2+4x - 6y - 12=0$ which subtends an angle of π/3 radians at its centre is
a)$(x+2)^2+(y-3)^2= 6.25$ b)$(x-2)^2+(y+3)^2=6.25$ c)$(x+2)^2+(y-3)^2=18.75$ d)$(x+2)^2+(y+3)^2=18.75$

24.Tangents OP and OQ are drawn from the origin 'O' to the circle $x^2+y^2+2gx+2fy+c=0$.Then the equation of the circumcircle of the triangle OPQ is
a)$x^2+y^2+2gx+2fy=0$ b)$x^2+y^2+gx+fy=0$ c)$x^2+y^2 - gx - fy=0$ d) $x^2+y^2 - 2gx - 2fy=0$

25.The slope of the tangent at the point (h,h) of the circle $x^2+y^2=a^2$ is
a) 0 b)1 c) – 1 d) depending on h

MULTIPLE CHOICE QUESTIONS (Multiple Option Correct)

1. The equations of the common tangents of the circle $x^2+y^2 - 2x - 6y+9=0$ and $x^2+y^2+6x - 2y+1=0$ are
a) x=0 b) y=4 c) y=0 d) x=4

2.The equation(s) of the tangent at the point (0,0) to the circle, making intercepts of the length 2a and 2b units on the coordinate axes, is (are)
a) ax+by=0 c) ax – by=0 c) x=y d) none of these

3.If the equation of the tangent to the circle $x^2+y^2-2x+6y-6=0$ parallel to $3x-4y+7=0$ is $3x-4y+|k|=0$, then the value of k are

a) 5 b) 7 c) – 7 d) – 5

COMPREHENSION TYPE

Read the following write up carefully and answer the following questions:

Let ABC be triangle whose equation of sides are AB = x+2y=3, AC= 2x+y=3 and BC= x+y=4. $S1_1$, S_2, S_3 are three circles drawn considering AB,AC and BC as diameter respectively. The radical axis of S_1 and S_2, S_1 and S_3, S_2 and S_3 are $L_{12}=0$, $L_{13}=0$,$L_{23}=0$. These radical axes meet sides BC, AC and AB at D, E and F respectively and triangle DEF is formed.

1.Equation to circumcircle of triangle ADC is

a) $x^2+y^2-6x+4=0$ b) $x^2+y^2-6y+4=0$ c) $x^2+y^2+6x+4=0$ d) none of these

2.Equation of $L_{12}=0$ is

a) x – y=2 b) 2x+3y=5 c)x – y=0 d) none of these

3.Radical centre of circles S_1, S_2 ,S_3 is

a) (3, - 3) b) (-3, -3) c) (-7, -7) d) none of these

NUMERICAL BASED

1.The circles $x^2+y^2+x+y=0$ and $x^2+y^2+x-y=0$ intersected at an angle of $2\pi/k$, then k is equal to?

2.The radius of the circle formed by the lines x=0, y=0, 4x+3y – 24=0 is?

SECTION – II

Multiple Choice Questions (Single Option Correct)

1.Consider triangle ABC with AB=3 units, AC= 7 units, B=(0,0) and C= (3,4). The possible equation of the altitude of the triangle drawn through A,is

a)6x – 8y+15=0 b)6x+8y – 15=0 c) 6x+8y+15=0 d) 8x+6y+15=0

2.The angle between the tangents drawn from origin to the circle $(x-7)^2+(y+1)^2=25$ is

a)$\pi/8$ b)$\pi/6$ d)$\pi/3$ d)$\pi/2$

3. The length of the tangent from (2,1) to the circle $x^2+y^2+4y+3=0$ is

a) $\sqrt{6}$ b)$\sqrt{12}$ c) 6 d) 12

4. The equation of the circle having centre on the line x+2y – 3=0 and passing through the point of intersection of the circles $x^2+y^2-2x-4y+1=0$ and $x^2+y^2-4x-2y+4=0$ is

a) $x^2+y^2-3x+4=0$ b)$x^2+y^2-6x+7=0$ c) $x^2+y^2-2x-2y+1=0$ d) $x^2+y^2+2x-4y+4=0$

5. If a circle passes through the point (1,2) and cuts the circle $x^2+y^2=4$ orthogonally, then the equation of the locus of the centre is

a) $x^2+y^2-3x-8y+1=0$ b) $x^2+y^2-2x-6y-7=0$ c) 2x+4y – 9=0 d) 2x+4y – 1=0

6.Which of the following is a point on the common chord of the circle $x^2+y^2+2x-3y+6=0$ and $x^2+y^2+x-8y-13=0$?

a)(1,4) b) (1,-2) c) (1,-4) d) (1,2)

7. The number of common tangents to the circles $x^2+y^2-x=0$ and $x^2+y^2+x=0$ is

a) 2 b) 1 c) 4 d) 3

8. The circles $x^2+y^2-12x-12y=0$ and $x^2+y^2+6x+6y=0$

a) intersect in two points b) touch each other externally c) touch each other internally

d) none of these

9.The centre of the circle is (3,1) and it makes an intercept of a 6 units on the line 2x – 5y+18=0. The equation of the circle is

a)$x^2+y^2-6x-2y-28=0$ b) $x^2+y^2+6x-2y+28=0$ c) $x^2+y^2+4x-2y+24=0$

d) $x^2+y^2+2x-2y-12=0$

10.The straight line 3x+4y=20 and the circle $x^2+y^2=16$

a) touch each other b) intersect at two distinct points c) neither touch nor intersect in two points

d) none of these

11. The intercept on the line y=x by the circle $x^2+y^2-2x=0$ is AB. Equation of the circle on AB as diameter is

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)$x^2+y^2+x-y=0$