doubtnut
India's Number 1 Education App

MATHS

BOOKS - SAI MATHS (TELUGU ENGLISH)

CIRCLE

Problems

1. If (4,2) and (k,-3) are conjugate points with respect to $x^2 + y^2 - 5x + 8y + 6 = 0$ them k=

A. $\frac{28}{3}$

B. $\frac{-28}{3}$

C. $\frac{3}{28}$

D. $\frac{-3}{28}$

Answer: A

Watch Video Solution

2. The area (in sq units) of the triangle formed by the tangent, normal at $(1, \sqrt{3})$ to the circle $x^2 + y^2 = 4$ and the X-axis, is

A. $4\sqrt{3}$

B. $\frac{7}{2}\sqrt{3}$

C. $2\sqrt{3}$

D. $\frac{1}{2}\sqrt{3}$

Answer: C

Watch Video Solution

3. The value of a, such that the power of the point (1, 6) with respect to the circle $x^2 + y^2 + 4x - 6y - a = 0$ is -16 is

A. 7

B. 11

C. 13

D. 21

Answer: D

Watch Video Solution

4. The sum of the minimum and maximum distances of the point (4,-3) to the circlex^2 +y^2+4x-10y-7=0

A. 10

B. 12

C. 16

D. 20

Answer: D

Watch Video Solution

5. If $x - y + 1 = 0$ meets the circle $x^2 + y^2 + y - 1 = 0$ at A and B , then the equation of the circle with AB as diameter is

A. $2\left(x^2 + y^2\right) + 3x - y + 1 = 0$

B. $2\left(x^2 + y^2\right) + 3x - y + 2 = 0$

C. $2\left(x^2 + y^2\right) + 3x - y + 3 = 0$

D. $x^2 + y^2 + 3x - y + 1 = 0$

Answer: A

Watch Video Solution

6. A circle with centre at (2, 4) is such that the line x+y+2 =0 cuts a chord of length 6. The radius of the circle is

A. $\sqrt{41}$ cm

B. $\sqrt{11}$ cm

C. $\sqrt{21}$ cm

D. $\sqrt{31}$ cm

Answer: A

Watch Video Solution

7. The condition for the lines lx + my + n = 0 and $l_1x + m_1y + n_1 = 0$ to be conjugate with respect to the circle $x^2 + y^2 = r^2$, is

A. $r^2(11_1 + mm_1) = nn_1$

B. $r^2(11_1 - mm_1) = nn_1$

C. $r^2(11_1 + mm_1) + nn_1 = 0$

D. $r^2(1m_1 + 1_1m) = nn_1$

Answer: A

View Text Solution

8. The circle $4x^2 + 4y^2 - 12x - 12y + 9 = 0$

A. toches both the axes

B. touches the x-axis only

C. touches the y-axis only

D. does not touch the axes

Answer: A

Watch Video Solution

9. For the circle C with the equation $x^2 + y^2 - 16x - 12y + 64 = 0$ match the List I with the List II given below,

	List I		List II
(i)	The equation of the polar of (-5, 1) with respect to C	(A)	$y = 0$
(ii)	The equation of the tangent at (8, 0) to C	(B)	$y = 6$
(iii)	The equation of the normal at (2, 6) to C	(C)	$x + y = 7$
(iv)	The equation of the diameter of C through (8, 12)	(D)	$13x + 5y = 98$
		(E)	$x = 8$

The correct match is

A.
i	ii	iii	iv
D	B	A	E

B.
i	ii	iii	iv
D	A	B	E

C.
i	ii	iii	iv
C	D	A	B

D.
i	ii	iii	iv
C	E	B	A

Answer: B

Watch Video Solution

10. If the length of the tangent from (h,k) to the circle $x^2 + y^2 = 16$ is twice the length of the tangent from the same point to the circle

$x^2 + y^2 + 2x + 2y = 0$, then

A. $h^2 + k^2 + 4h + 4k + 16 = 0$

B. $h^2 + k^2 + 3h + 3k = 0$

C. $3h^2 + 3k^2 + 8h + 8k + 16 = 0$

D. $3h^2 + 3k^2 + 4h + 4k + 16 = 0$

Answer: C

Watch Video Solution

11. Given the circle C with the equation $x^2 + y^2 - 2x + 10y - 38 = 0$.

Match the List I with the List II given below concerning C.

	List I		List II
$A.$	The equation of the polar of $(4, 3)$ with respect to C	$I.$	$y + 5 = 0$
$B.$	The equation of the tangent at $(9, -5)$ on C	$II.$	$x = 1$
$C.$	The equation of the normal at $(-7, -5)$ on C	$III.$	$3x + 8y = 27$
$D.$	The equation of the diameter of C passing through $(1, 3)$	$IV.$	$x + y = 3$
		$V.$	$x = 9$

The correct answer is

A. $\begin{matrix} A & B & C & C \\ III & I & V & II \end{matrix}$

B. $\begin{matrix} A & B & C & C \\ IV & V & I & II \end{matrix}$

C. $\begin{matrix} A & B & C & C \\ III & V & I & II \end{matrix}$

D. $\begin{matrix} A & B & C & C \\ IV & II & I & V \end{matrix}$

Answer: C

Watch Video Solution

12. Consider the circle $x^2 + y^2 - 4x - 2y + c = 0$ whose centre is A(2, 1)

If the point P (10, 7) is such that the line segment PA meets the circle in Q

With PQ=5, then c=

A. -15

B. 20

C. 30

D. -20

Answer: D

Watch Video Solution

13. If the line x+3y=0 is tangent at (0,0) to the circle of radius 1, then the centre of one such circle is

A. (3, 0)

B. $\left(\frac{-1}{\sqrt{10}}, \frac{3}{\sqrt{10}}\right)$

C. $\left(\frac{3}{\sqrt{10}}, \frac{-3}{\sqrt{10}}\right)$

D. $\left(\frac{1}{\sqrt{10}}, \frac{3}{\sqrt{10}}\right)$

Answer: D

Watch Video Solution

14. The radius of the circle $r = 12\cos\theta + 5\sin\theta$ is

A. $\frac{5}{12}$

B. $\frac{17}{2}$

C. $\frac{15}{2}$

D. $\frac{13}{2}$

Answer: D

Watch Video Solution

15. If the line y=2x+c is a tangent to the circle $x^2 + y^2 = 5$ then a value of c is

A. 2

B. 3

C. 4

D. 5

Answer: D

Watch Video Solution

16. A line segment AM=a moves in the XOY plane such that AM is parallel to the X-axis. If A moves along the circle $x^2 + y^2 = a^2$, then the locus of M is

A. $x^2 + y^2 = 4a^2$

B. $x^2 + y^2 = 2ax$

C. $x^2 + y^2 = 2ay$

D. $x^2 + y^2 = 2ax + 2ay$

Answer: B

Watch Video Solution

17. If the lines 3x+4y-14=0 and 6x+8y+7=0 are both tangents to a circle, then its radius is

A. 7

B. $\frac{7}{2}$

C. $\frac{7}{4}$

D. $\frac{7}{6}$

Answer: C

Watch Video Solution

18. The equation of the circle concentric with the circle $x^2 + y^2 - 6x + 12y + 15 = 0$ and of double its area is:

A. $x^2 + y^2 - 6x + 12y - 15 = 0$

B. $x^2 + y^2 - 6x + 12y - 30 = 0$

C. $x^2 + y^2 - 6x + 12y - 25 = 0$

D. $x^2 + y^2 - 6x + 12y - 20 = 0$

Answer: A

Watch Video Solution

19. The length of the common chord of the circles of radii 15 and 20, whose centres are 25 unit of distance apart, is

A. 12

B. 16

C. 24

D. 25

Answer: C

Watch Video Solution

20. The equations of the circles which pass through the origin and makes intercepts of lengths 4 and 8 on the x and y axis respectively, are :

A. $x^2 + y^2 \pm 4x \pm 8y = 0$

B. $x^2 + y^2 \pm 2x \pm 4y = 0$

C. $x^2 + y^2 \pm 8x \pm 16y = 0$

D. $x^2 + y^2 \pm x \pm y = 0$

Answer: A

Watch Video Solution

21. The locus of centre of a circle which passes through the origin and cuts off a length of 4 units from the line x=3 is

A. $y^2 + 6x = 0$

B. $y^2 + 6x = 13$

C. $y^2 + 6x = 10$

D. $x^2 + 6y = 13$

Answer: B

Watch Video Solution

22. The diameters of a circle pre along 2x+y-7=0 and x+3y- 11=0. Then, the equation of this circle, which also passes through (5,7) is:

A. $x^2 + y^2 - 4x - 6y - 16 = 0$

B. $x^2 + y^2 - 4x - 6y - 20 = 0$

C. $x^2 + y^2 - 4x - 6y - 12 = 0$

D. $x^2 + y^2 + 4x + 6y - 12 = 0$

Answer: C

Watch Video Solution

23. If the lines 2x -3y=5 and 3x-4y=7 are two diameters of a circle of radius 7, then the equation of the circle is

A. $x^2 + y^2 + 2x - 4y - 47 = 0$

B. $x^2 + y^2 = 49$

C. $x^2 + y^2 - 2x + 2y - 47 = 0$

D. $x^2 + y^2 = 17$

Answer: C

Watch Video Solution

24. The inverse of the point (1, 2) with respect to the circle $x^2 + y^2 - 4x - 6y + 9 = 0$ is

A. $\left(1, \frac{1}{2}\right)$

B. (2, 1)

C. (0, 1)

D. (1, 0)

Answer: C

Watch Video Solution

25. If θ is the angle between the tangents from (-1,0) to the circle $x^2 + y^2 - 5x + 4y - 2 = 0$, then $\theta =$

A. $2\tan^{-1}\left(\frac{7}{4}\right)$

B. $\tan^{-1}\left(\frac{7}{4}\right)$

C. $2\cot^{-1}\left(\frac{7}{4}\right)$

D. $\cot^{-1}\left(\frac{7}{4}\right)$

Answer: A

Watch Video Solution

26. The radius of the circle with the polar equation $r^2 - 8r\left(\sqrt{3}\cos\theta + \sin\theta\right) + 15 = 0$ is

A. 8

B. 7

C. 6

D. 5

Answer: B

Watch Video Solution

27. The equation of the circle of radius 3 that lies in the fourth quadrant and touching the lines x=0 and y=0 is

A. $x^2 + y^2 - 6x + 6y + 9 = 0$

B. $x^2 + y^2 - 6x - 6y - 9 = 0$

C. $x^2 + y^2 + 6x - 6y + 9 = 0$

D. $x^2 + y^2 + 6x + 6y + 9 = 0$

Answer: A

Watch Video Solution

28. The polar equation of the circle with centre $\left(2, \frac{\pi}{2}\right)$ and radius 3 units is

A. $r^2 + 4r\cos\theta = 5$

B. $r^2 + 4r\sin\theta = 5$

C. $r^2 - 4r\sin\theta = 5$

D. $r^2 - 4r\cos\theta = 5$

Answer: C

Watch Video Solution

29. The number of common tangentss to the circles $x^2 + y^2 - 8x + 2y = 0$ and $x^2 + y^2 - 2x - 16y + 25 = 0$ is

A. 1

B. 2

C. 3

D. 4

Answer: B

Watch Video Solution

30. Statement I The circle $x^2 + y^2 - 6x - 4y - 7 = 0$ touches y-axis

Statement II The circle $x^2 + y^2 + 6x + 4y - 7 = 0$ touches x-axis

Which of the following is a correct statement ?

A. Both I and II are true

B. Neither I nor II is true

C. I is true, II is false

D. I is false, II is true

Answer: B

Watch Video Solution

31. Find the length of the tangent form

$(1, 3)$ to the circle $x^2 + y^2 - 2x + 4y - 11 = 0$.

A. 1

B. 2

C. 3

D. 4

Answer: C

Watch Video Solution

32. If $x - y + 1 = 0$ meets the circle $x^2 + y^2 + y - 1 = 0$ at A and B , then the equation of the circle with AB as diameter is

A. $2\left(x^2 + y^2\right) + 3x - y + 1 = 0$

B. $2\left(x^2 + y^2\right) + 3x - y + 2 = 0$

C. $2\left(x^2 + y^2\right) + 3x - y + 3 = 0$

D. $x^2 + y^2 + 3x - y + 1 = 0$

Answer: A

Watch Video Solution

33. If y=3x is a tangent to a circle with centre (1,1) then the other tangent drawn through (0,0) to the circle is

A. 3y = x

B. y = - 3x

C. y = 2x

D. y = - 2x

Answer: A

Watch Video Solution

34. Which of the following equation gives a circle ?

A. $r = 2\sin\theta$

B. $r^2\cos 2\theta = 1$

C. $r(4\cos\theta + 5\sin\theta) = 3$

D. $5 = r\left(1 + \sqrt{2}\cos\theta\right)$

Answer: A

Watch Video Solution

35. If P_1, P_2, P_3 are the perimeters of the three circles $x^2 + y^2 + 8x - 6y = 0, 4x^2 + 4y^2 - 4x - 12y - 186 = 0$ and $x^2 + y^2 - 6$ respectively, then

A. $P_1 < P_2 < P_3$

B. $P_1 < P_3 < P_2$

C. $P_3 < P_3 < P_1$

D. $P_2 < P_3 < P_1$

Answer: B

Watch Video Solution

36. The centre of the circle $r^2 - 4r(\cos\theta + \sin\theta) - 4 = 0$ in cartesian coordinates is

A. (1, 1)

B. (-1, -1)

C. (2, 2)

D. (-2, -2)

Answer: C

Watch Video Solution

37. The radius of the circle $r = \sqrt{3}\sin\theta + \cos\theta$ is

A. 1

B. 2

C. 3

D. 4

Answer: A

Watch Video Solution

38. The number of circles that touches all the three lines x+y-1=0, x-y-1=0 and y+1=0 is

A. 2

B. 3

C. 4

D. 1

Answer: C

Watch Video Solution

39. If the line 3x-2y + 6=0 meets X-axis and Y-axis respectively at A and B, then the equalion of the circle with radius AB and centre at A. is

A. $x^2 + y^2 + 4x + 9 = 0$

B. $x^2 + y^2 + 4x - 9 = 0$

C. $x^2 + y^2 + 4x + 4 = 0$

D. $x^2 + y^2 + 4x - 4 = 0$

Answer: B

Watch Video Solution

40. A line l meets the circle $x^2 + y^2 = 61$ in A , B and P(-5,6) is such that PA = PB = 10 . Then the quation of l is

A. 5x + 6y + 11 = 0

B. 5x - 6y - 11 = 0

C. 5x - 6y + 11 = 0

D. 5x - 6y + 12 = 0

Answer: C

Watch Video Solution

41. If (1, a), (b, 2) are conjugate points with renpcet to the circle $x^2 + y^2 = 25$, then 4a+2b=

A. 25

B. 50

C. 100

D. 150

Answer: B

Watch Video Solution

42. If P is a point such that the ratio of the square of the lengths of the tangents from R to the circles $x^2 + y^2 + 2x - 4y - 20 = 0$ and $x^2 + y^2 - 4x + 2y - 44 = 0$ is $2 : 3$, then the locus of P is a circle with centre

A. (7, -8)

B. (-7, 8)

C. (7, + 8)

D. (-7, -8)

Answer: B

View Text Solution

43. If $5x - 12y + 10 = 0$ and $12y - 5x + 16 = 0$ are two tangents to a circle, then the radius of the circle is

A. 1

B. 2

C. 4

D. 6

Answer: A

Watch Video Solution

44. The equation of the circle of radius 5 and touching the coordinate axes in third quadrant is

A. $(x-5)^2+(y+5)^2=25$

B. $(x+5)^2+(y+5)^2=25$

C. $(x+4)^2+(y+4)^2=25$

D. $(x+6)^2+(y+6)^2=25$

Answer: B

Watch Video Solution

45. The radius of the larger circle lying in the first quadrant and touching the line 4x + 3y - 12 = 0 and the coordinate axes is

A. 5

B. 6

C. 7

D. 8

Answer: B

Watch Video Solution

46. The four distinct points (0, 0), (2, 0), (0, -2) and (k, -2) are concyclic if k is equal t

A. 3

B. 1

C. -2

D. 2

Answer: D

Watch Video Solution

47. A line is at a constant distance c from the origin and meets the coordinate axes at A and B. The locus of the centre of the circle passing through, A, B, is

A. $x^2 + y^2 + c^2$

B. $x^2 + y^2 + 2c^2$

C. $c^{-2} = \frac{1}{4}(x^{-2} + y^{-2})$

D. $x^2 + y^2 = 4c^2$

Answer: C

Watch Video Solution

48. The line y = mx + c intercepts the circle $x^2 + y^2 = r^2$ in two distinct points, if

A. $r\sqrt{1+m^2} < c < r\sqrt{1+m^2}$

B. $c < -r\sqrt{1+m^2}$

C. $c < r\sqrt{1+m^2}$

D. None of the above

Answer: A

View Text Solution

49. The equation of the normal to the circle $x^2 + y^2 + 6x + 4y - 3 = 0$ at (1,-2) to is

A. y + 1 = 0

B. y + 2 = 0

C. y + 3 = 0

D. y - 2 = 0

Answer: B

Watch Video Solution

50. The number of circles that touch all the straight lines $x + y = 4$, $x - y = -2$ and $y = 2$, is

A. 1

B. 2

C. 3

D. 4

Answer: D

Watch Video Solution