MATHS

BOOKS - S CHAND MATHS (ENGLISH)

CIRCLES

Example

1. The point diametrically opposite to the point (-3, -4) on the circle

$x^2 + y^2 + 2x + 4y - 3 = 0$ is (i) (3, - 4) (ii) (- 3, 4) (iii) (1, 0) (iv) (3, 4)

A. (3, - 4)

B. (- 3, 4)

C. (1, 0)

D. (3, 4)

Answer: C

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2. If the lines 2x + 3y + 1 = 0 and 3x - y-4 = 0 lie along two diameters of a circle of circumference 10π, then the equation of circle is   (i) $x^2 + y^2 + 2x + 2y + 23 = 0$ (ii) $x^2 + y^2 - 2x - 2y - 23 = 0$ (iii) $x^2 + y^2 - 2x + 2y - 23 = 0$ (iv) $x^2 + y^2 + 2x - 2y + 23 = 0$

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. $x^2 + y^2 + 2x - 2y + 23 = 0$

Answer: C

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3. The equation of the circle which, passes through the point $(-2, -3)$ and has its centre on the negative direction of x-axis and is of radius 5 units is `

A. $x^2 + y^2 + 12x + 11 = 0$

B. $x^2 + y^2 - 12x + 11 = 0$

C. $x^2 + y^2 - 12x - 11 = 0$

D. $x^2 + y^2 + 12x - 11 = 0$

Answer: A

4. The equation of a circle which touches the y-axis at origin and whose radius is 3 units is

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

B. $x^2 + y^2 \pm 6x = 0$

C. $x^2 + y^2 \pm 3x = 0$

D. $x^2 + y^2 \pm 3y = 0$

Answer: B

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5. The shortest distance of the point (8,1) from

the circle $(x + 2)^2 + (y - 1)^2 = 25$ is

A. 15

B. 10

C. 5

D. 6

Answer: C

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6. The smallest circle with centre on y-axis and passing through the point (7,3) has radius

A. $\sqrt{58}$

B. 7

C. 3

D. 4

Answer: B

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7. If the equation

$$(4\lambda - 3)x^2 + \lambda y^2 + 6x - 2y + 2 = 0$$

represents a circle, then its centre is

A. (a) (3,-1)

B. (b) (3,1)

C. (c) (-3,1)

D. (d) (-3,-1)

Answer: C

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Multiple Choice Questions

1. The equation of the circle which touches x-axis and whose centre is (1,2) is

    A. (a) $x^2 + y^2 - 2x - 4y + 4 = 0$

    B. (b) $x^2 + y^2 - 2x - 4y + 1 = 0$

    C. (c) $x^2 + y^2 + 2x + 4y - 1 = 0$

    D. (d) $x^2 + y^2 + 2x - 4y + 1 = 0$

Answer: B

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2. The equation of a circle which touches both the coordinate axes and the line x = 3 is

A. $4x^2 + 4y^2 - 12x \pm 12y + 9 = 0$

B. $4x^2 + 4y^2 + 12x \pm 12y + 9 = 0$

C. $4x^2 + 4y^2 \pm 12x - 12y + 9 = 0$

D. $4x^2 + 4y^2 \pm 12x + 12y + 9 = 0$

Answer: A

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3. If a circle passes through the point (0,0), (a,0) and (0,b), then the coordinates of its centre are

A. (a,b)

B. $\left(-\dfrac{a}{2}, \ -\dfrac{b}{2} \right)$

C. $\left(\dfrac{a}{2}, \ \dfrac{b}{2} \right)$

D. (-a, -b)

Answer: C

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4. The farthest distance of the point (1,5) from the circle $(x - 1)^2 + (y + 1)^2 = 16$ is

A. 4

B. 5

C. 6

D. 10

Answer: D

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5. If the lines $3x - 4y + 4 = 0$ and $6x - 8y - 7 = 0$ are tangents to a circle , then the radius of the circle is

A. $\dfrac{3}{4}$ units

B. $\dfrac{3}{2}$ units

C. 3 units

D. $\dfrac{2}{3}$ units

Answer: A

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6. If one end of a diameter of the circle $x^2 + y^2 - 4x - 6y + 11 = 0$ is $(3, 4)$, then the coordinates of the other end of the diameter are

A. (a) (2,1)

B. (b) (-2,1)

C. (c) (1,2)

D. (d) (-1,-2)

Answer: C

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

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

B. B. $x^2 + y^2 - 6x + 12y + 45 = 0$

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

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

Answer: D

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8. The eqaution of the circle concentric with $x^2 + y^2 - 3x + 4y + c = 0$ and passing through the point (-1,-2) is

    A. A. $x^2 + y^2 - 3x + 4y + 2 = 0$

    B. B. $x^2 + y^2 - 3x + 4y - 1 = 0$

    C. C. $x^2 + y^2 - 3x + 4y - 5 = 0$

    D. D. $x^2 + y^2 - 3x + 4y = 0$

Answer: D

9. If the point (2,-3) lies on the circle $x^2 + y^2 + 2gx + 2fy + c = 0$ which is concentric with the circle $x^2 + y^2 + 6x + 8y - 25 = 0$, then the value of c is

A. (a) 1

B. (b) -1

C. (c) 49

D. (d) -49

Answer: B

10. Find the equation of the circle which passes through the origin and cuts off intercepts -2 and 3 from the coordinate axes .

A. `x^(2) + y^(2) + 2x + 3y = 0

B. $x^2 + y^2 + 2x - 3y = 0$

C. $x^2 + y^2 - 2x + 3y = 0$

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

Answer: B

11. The equation of the smallest circle passing through the point (1,0) and (0,1) is

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

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

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

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

Answer: B

12. If the equation

$$kx^2 + (2k - 3)y^2 - 6x + 4y + 3 = 0$$

represents a circle, then its centre is

A. $\left(-1, \dfrac{2}{3} \right)$

B. $\left(2, -\dfrac{4}{3} \right)$

C. $\left(1, -\dfrac{2}{3} \right)$

D. $\left(1, \dfrac{2}{3} \right)$

Answer: C

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13. The equation of two diameters of a cirlce are $x - y = 5$ and $2x + y = 4$ and the radius of the circle is 5 units, then the equation of the circle is

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

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

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

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

Answer: A

14. The equation of the circle whose center is (3,-2) and which touches the line $3x - 4y + 13 = 0$ is

A. A. $x^2 + y^2 + 6x - 4y - 23 = 0$

B. B. $x^2 + y^2 - 6x - 4y - 23 = 0$

C. C. $x^2 + y^2 - 6x + 4y - 23 = 0$

D. D. $x^2 + y^2 + 6x + 4y + 23 = 0$

Answer: C

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15. The equation of the incircle of the triangle

formed by the coordinate axes and the line 4x

+ 3y - 6 = 0 is

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

(B) $4(x^2 + y^2 - x - y) + 1 = 0$

(C) $4(x^2 + y^2 + x + y) + 1 = 0$

(D) $4(x^2 + y^2 - x - y) - 1 = 0$

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

B. $4(x^2 + y^2 - x - y) + 1 = 0$

C. $4(x^2 + y^2 + x + y) + 1 = 0$

D. $4(x^2 + y^2 - x - y) - 1 = 0$

Answer:

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16. Equation of a circle which passes through (3,6) and touches the axes is

A. $x^2 + y^2 + 6x + 6y + 3 = 0$

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

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

D. none of these

Answer: C

17. If the circle $x^2 + y^2 + 2gx + 8y + 16 = 0$ touches the x axis, then the values of g are

A. A. ± 16

B. B. ± 8

C. C. ± 4

D. D. ± 2

Answer: C

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18. If the circle $2x^2 + 2y^2 = 5x$ touches the line $3x + 4y = k$,then the values of k are

A. $-10, \dfrac{5}{2}$

B. $10, -\dfrac{5}{2}$

C. $10, \dfrac{5}{2}$

D. $5, \dfrac{5}{4}$

Answer: B

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19. Equation of the circle with centre lies on y-axis and passing through the origin and the point (2,3) is

A. $x^2 + y^2 + 13y = 0$

B. $3x^2 + 3y^2 - 13y^2 = 0$

C. $6x^2 + 6y^2 - 13x = 0$

D. $x^2 + y^2 + 13x + 3 = 0$

Answer: B

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20. If the centroid of an equilateral triangle is

(1,1) and its one vertex is (2,-1) , then equation

of the circumcircle of the triangle is

A. $x(2) + y^2 - 2x - 2y - 3 = 0$

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

C. $x^2 + y^2 + 2x + 2y - 3 = 0$

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

Answer: A

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21. The equation of a circle with origin as centre and passing through the vertices of an equilateral triangle whose median is of length 3a is

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

B. B. $x^2 + y^2 = 9a^2$

C. C. $x^2 + y^2 = 16a^2$

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

Answer: A

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22. The circle $x^2 + y^2 + 2gx + 2fy + c = 0$ does not intersect the y-axis if

A. A. $g^2 < c$

B. B. $f^2 < c$

C. C. $4f^2 < c$

D. D. $f^2 < 4c$

Answer: B

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23. If the circles $x^2 + y^2 = k$ and $x^2 + y^2 + 8x - 6y + 9 = 0$ touch externally, then the value of k is

A. 1

B. -1

C. 9

D. 81

Answer: A

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24. The equation of the diameter of the circle $x^2 + y^2 - 6x + 2y = 0$ which passes through origin is

A. $y + 3x = 0$

B. x - 3y = 0

C. x + 3y = 0

D. y - 3x = 0

Answer: C

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