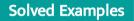


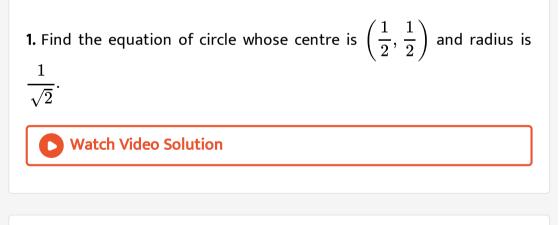


MATHS

BOOKS - KC SINHA ENGLISH

CIRCLES - FOR BOARDS





2. Find the equation of the circle whose centre is (1,2) and which passes

through the point (4,6).

3. If the equations of two diameters of a circles are x + y = 6 and x + 2y = 4 and the radius is 10, find the equation of the circle.

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4. If the line 2x - y + 1 = 0 touches the circle at the point (2, 5) and the centre of the circle lies in the line x + y - 9 = 0. Find the equation of the circle.

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5. Find the equation of the circle which passes through the origin and cuts off intercepts 6 and 8 from the positive parts of x and y axes respectively.

6. Find the equation of the circle which touches : y-axis and has centre

at (2, 3)`

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7. Find the equation of the circle which touches : y-axis at the origin and has radius 4.

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8. Find the equation of the circle which touches the lines x = 0, y = 0 and x = 4 and lies in the first quadrant.

9. Find the equation of a circle which touches both the axes and whose

radius is 2 units



10. Find the equation of the circle which has its centre at the point (3,4)

and touches the straight line 5x + 12y - 1 = 0.

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11. Find the equations of the circles passing through two points on y-

axis at distance 3 from the origin and having radius 5.



12. Find the equation of a circle which passes through the point (2, 0) and whose centre is the limit of the point of intersection of eth lines

$$3x+5y=1and(2+c)x+5c^2y=1asc\overrightarrow{1}.$$



13. Find the equation of the circle with radius 5 whose center lies on

the x-axis and passes through the point (2, 3).



14. A circle has radius 3units and its centre lies on the line y = x - 1.

Find the equation of the circle, if it passes through (7, 3).

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15. Find the equation of the circle passing through the points (1, -2)and(4, -3) and whose centre lies on the 3x + 4y = 7.

16. One diameter of the circle circumscribing the rectangle ABCD is 4y = x + 7. If the coordinates of A and B are (-3,4) and (5,4) respectively, find the equation of the circle.



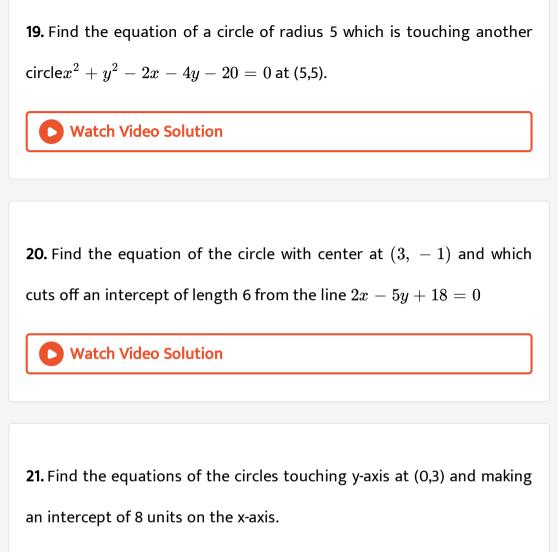
17. Find the equation of the circle which touches the coordinate axes

and whose centre lies on the line x - 2y = 3.



18. A circle of radius 2 lies in the first quadrant and touches both the axes. Find the equation of the circle with centre at (6, 5) and touching the above circle externally.







22. Find the equation of the circle which touches the axis of x at a distance 3 from the origin and cuts an intercept of length 6 on the axis

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23. A circle of radius 5 units touches the coordinate axes in first quadrant. If the circle makes one complete roll on X-axis along the positive direction of X-axis, find its equation in the new position.



24. Find the centre and radius of the circles $(x + 5)^2 + (y - 3)^2 = 36$

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25. Find the centre and radius of each of the following circle: $x^2 + y^2 - x + 2y - 3 = 0$

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

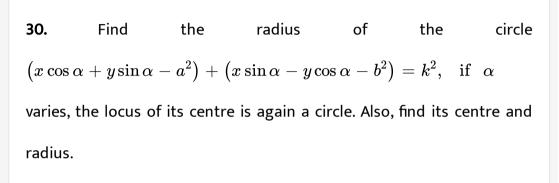
27. Prove that the radii of the circles $x^2 + y^2 = 1, x^2 = y^2 - 2x - 6y = 6$ and $x^2 + y^2 - 4x - 12y = 9$ are in AP.

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28. Find the coordinates of the middle point of the chord which the circle $x^2 + y^2 + 4x - 2y - 3 = 0$ cuts off on the line x - y + 2 = 0

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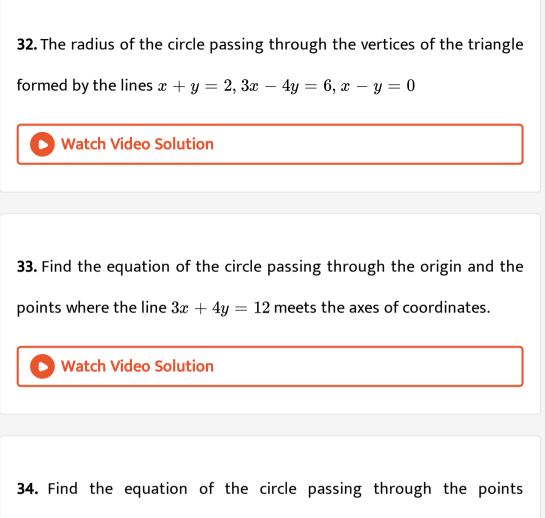
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31. Find the equation of the circle whose centre is (h,k) and which

passes through the point (p, q).



 $(1,\ -2)$ and $(4,\ -3)$ and whose centre lies on the 3x+4y=7.



35. about to only mathematics

36. Find the equation of the circle which passes through the centre of the circle $x^2 + y^2 + 8x + 10y - 7 = 0$ and is concentric with the circle $2x^2 + 2y^2 - 8x - 12y - 9 = 0$

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37. Find the equations of the circles touching y-axis at (0,3) and making

an intercept of 8 units on the x-axis.



38. The equation of circle which passes through (1, -1) and which touches the line 6x + y - 18 = 0 at point (3, 0) is

39. Show that a cyclic quadrilateral is formed by the lines 5x + 3y = 9, x = 3y, 2x = y and x + 4y + 2 = 0 taken in order. Find the equation of the circumcircle.



40. Examine whether the following equation represents a circle or not :

$$3x^2 + 3y^2 + 2xy + 3x + y = 0$$

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41. Examine whether the following equation represents a circle or not :

$$4x^2 + 4y^2 + 12x + 8y + 40 = 0$$

42. Examine whether that equations reprsent a circle, point or no circle

$$x^{2} + y^{2} - 3x + 3y + 10 = 0$$

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43. Examine whether that equations reprsent a circle, point or no circle

 $:x^2 + y^2 + 2x + 1 = 0$

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44. Examine whether that equations reprsent a circle, point or no circle

$$:x^2 + y^2 - 1 = 0$$

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45. Find the equation of the circle when the end points of a diameter are (5, -3) and (2, -4). Also find its centre and radius.

46. The abscissae 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.

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47. Find the equation of the circle passing through the origin and the points where the line 3x + 4y = 12 meets the axes of coordinates.

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48. Find the equation of the circle whose diameter is the portion of the

line 3x + 4y - 14 = 0, intercepted by the lines y = x and 11x = 4y.

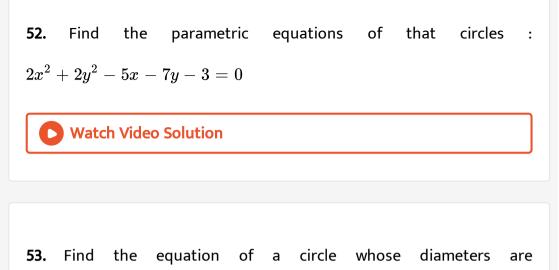
49. The sides of a square are x = 1, x = 3, y = 2 and y = 4. Find the equation of the circle drawn on the diagonal of the square as its diameter.

50. Find the parametric equations of that circles : $3x^2 + 3y^2 = 4$

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51. Find the parametric form of the equation of the circle $x^2 + y^2 + px + py = 0.$



2x-3y+12andx+4y-5=0 and area is 154squareunits .

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54. Find the Cartesian euqaiton of that curves whose parametric

 $\mathsf{equation}: x = 7 + 4\cos\alpha, y = -3 + 4\sin\alpha$



55. Find the Cartesian euqaiton of that curves whose parametric equation : $x = 5 + 3\cos\theta$, $y = 7 + 3\sin\theta$

56. Find the Cartesian euqaiton of that curves whose parametric

equation : $x = \cos \theta + \sin \theta + 1, y = \sin \theta - \cos \theta + 2$

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57. Show that equations $x = a \cos \theta + b \sin \theta, y = a \sin \theta - b \cos \theta$

represents a circle, wheter θ is a parameter.

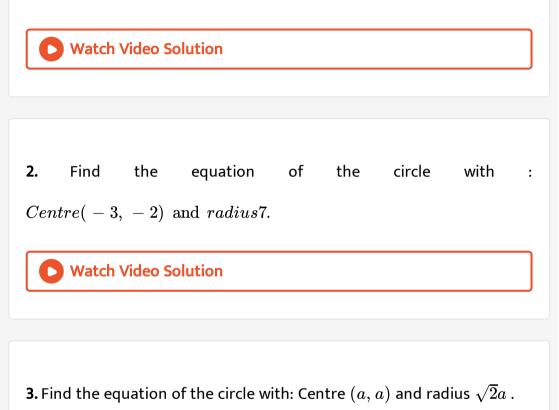


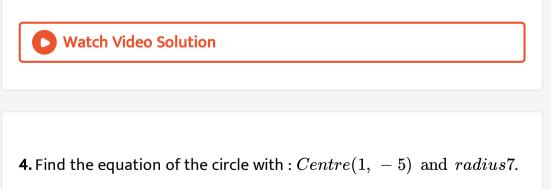
58. Show that the point (x,y) given by x= $rac{2at}{1+t^2}$ and $y=rac{aig(1-t^2ig)}{1+t^2}$ lies

on a circle



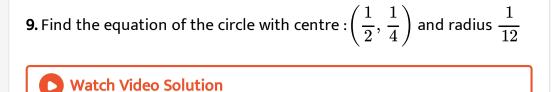
1. Find the equation of the circle with : Centre(-3, 2) and radius5.





5. Find the equation of the circle with centre at (0, 0) and radius 4.

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6. Find the equation of the circle with centre : (1, 1) and radius $\sqrt{2}$
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7. Find the equation of the circle with: centre (-2,3) and radius 4.
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8. Find the equation of the circle with centre : (0, 2) and radius 2
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10.

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11. Find the equation of the circle with centre (-a, -b) and radius $\sqrt{a^2-b^2}$.

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12. Find the equation of the circle with: Centre $(a \cos lpha, \ a \ s \in lpha)$ and radius a



13. Find the equation of the circle with : Centre(-1, -2) and diameter 25.

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14. Find the equation of the circle passing through (0, 0) and making intercepts a and b on the coordinate axes.

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15. Find the equation of the circle passing through the origin and cutting intercepts 10 and 24 from the positive side of x and y axis respectively



16. Find the equation of the circle touching : x-axis andhaving centre at

(4, 3)`

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17. Find the equation of the circle touching : x-axis at the origin and
having radius 10
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18. about to only mathematics
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19. The equation of circle having centre at (2,2) and passes through the
point (4.5) is

20. Find the equation of image of the circle $(x - 1)^2 + (y + 2)^2 = 5^0$ in the x-axis.

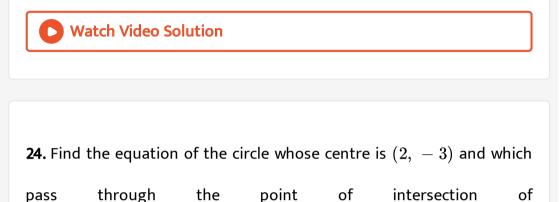
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21. Find the equation of the circle passing through the point (2, 4) and centre at the point of intersection of the lines x - y = 4 and 2x + 3y = -7.

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22. I the equations of two diameters of a circles are 2x + y = 6 and 3x + 2y = 4 and the radius is 10, find the equation of the circle.

23. Find the equation to the circle which passes through the point of intersection of 3x - 2y - 1 = 0 and 4x + y - 27 = 0 and whose centre is (2, 3)



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3x + 2y = 11 and 2x + 3y = 4.
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25. 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 $x^2 + y^2 - 2x - 8y = 5$.

26. Find the equation of the circle passing through the point of intersection of the lines x + 3y = 0 and 2x - 7y = 0 and whose centre is the point of intersection of the lines x + y + 1 = 0 and x - 2y + 4 = 0.

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27. Find the equation of circle whose centre is the point (1, -3) and

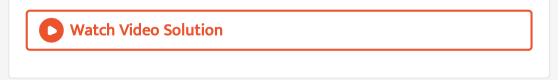
touches the line 2x - y - 4 = 0



28. Find the equation of the circle of radius 5 whose centre lies on y-

axis and which passes through the point (3, 2).

29. Find the equation of the circle whose radius is 5 and centre lies on the positive side of x-axis at a distance 5 from the origin.



30. Find the equation of the circle which passes through the points

(-1,2) and (3, -2) and whose centre lies on the line x - 2y = 0.

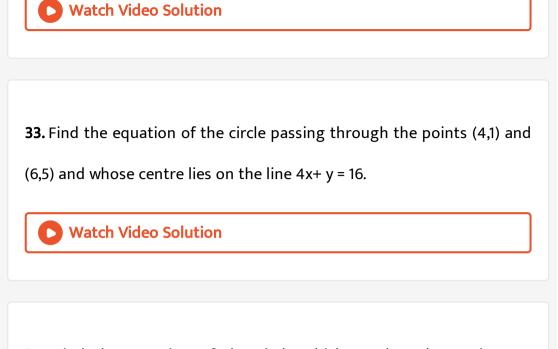
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31. Find the equation of circle passing through the point (2,3) and (-1,1)

and whose centre is on the line x - 3y - 11 = 0



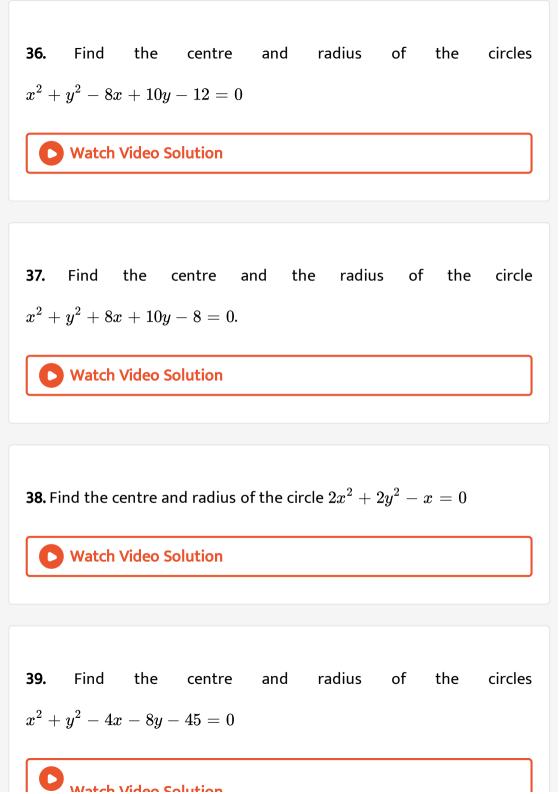
32. Find the equation of the circle which passes through the points (2, -2) , and (3,4) and whose centre lies on the line x + y = 2 .



34. Find the equation of the circle which touches the y-axis at a distance of +4 from the origin and cuts off an intercept 6 from the x-axis.

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35. Does the point (-2.5, 3.5) lie inside, outside or on the circle $x^2 + y^2 = 25?$



40. Find the centre and radius of each of that circles : $x^2 + \left(y-1
ight)^2 = 2$

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41. Find the centre and radius of each of that circles : $\left(x - \frac{1}{2}\right)^2 + \left(y + \frac{1}{3}\right)^2 = \frac{1}{4}$

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42. Find the centre and radius of each of that circles : $x^2 + y^2 - 2x + 4y = 8$

43. Find the centre and radius of each of the following circle: $x^2 + y^2 - 4x + 6y = 5$

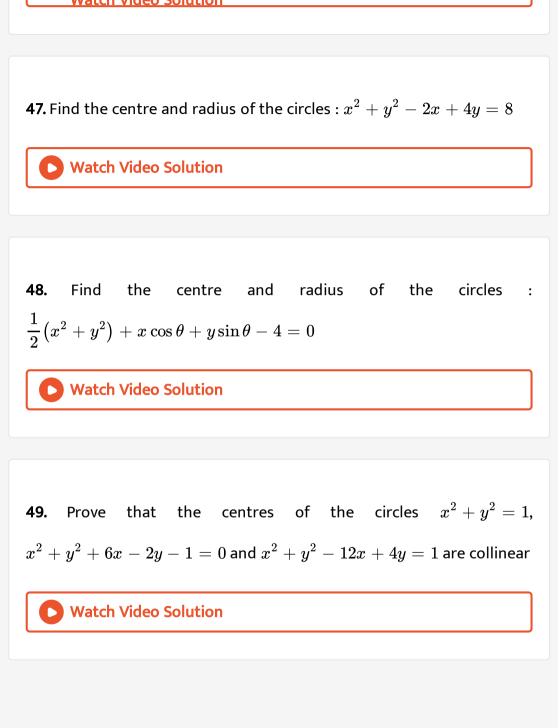
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44. Find the centre and radius of the circles :
$$x^2 + y^2 - 8x - 12y - 48 = 0$$

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45. Find the centre and radius of the circles $:x^2 + y^2 - ax - by = 0$

46. Find the centre and radius of the circles : $3x^2 + 3y^2 + 12x - 18y - 11 = 0$



50. Prove that the centres of the three circles $x^2 + y^2 - 4x - 6y - 12 = 0, x^2 + y^2 + 2x + 4y - 5 = 0$ and $x^2 + y^2 - 10x - 16y + 7 = 0$ are collinear.

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

52. Prove that the radii of the circles
$$x^2 + y^2 = 4$$
, $4x^2 + 4y^2 - 8x - 24y + 15 = 0$ and $x^2 + y^2 - 4y - 5 = 0$ are in arithmetic progression.

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53. Find the equation of the circles passing through the three points :

(0, 0), (5, 0) and (3, 3)



54. Find the equation of the circles passing through the three points :

(1, 0), (0, 1) and (-1, 0)

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55. Find the equation of the circles passing through the three points :

(1, -2), (5, 4) and (10, 5)



56. Find the equation of the circle passing through the point: (1, 2),

$$(3, -4)$$
 and $(5, -6)$

57. Find the equation of the circle circumscribing the triangle formed

by the straight lines x + y = 6, 2x + y = 4 and x - 2y = 5.

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58. Find the equation of the circle which is concentric with the circle $x^2 + y^2 - 4x + 6y - 3 = 0$ and the double of its area.

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59. Find the equation of the circle concentric with the circle $2x^2 + 2y^2 - 6x + 8y + 1 = 0$ and of double its area.

60. Find the equation. of the circle concentric with the $x^2 + y^2 + 4x - 8y - 6 = 0$ and having radius double of its radius.

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61. Find the equation of the circle concentric with the circle $x^2 + y^2 - 4x - 6y - 9 = 0$ and passing through the point (-4, -5)

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62. Find the equation of the circle passing through the points (1, -1)and centre at the intersection of the lines x - y = 4 and 2x + 3y = -7

63. The line 5x - y = 3 is a tangent to a circle at the point (2, 7) and its centre is on the line x + 2y = 19. Find the equation of the circle.



64. The line 4x-3y=-12 is tangent at the point (-3, 0) and the line 3x-4y=16

is tangent at the point (4, 1) to a circle. The equation of the circle is

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65. Find the equation of the circle circumscribing the quadrilateral

formed by the straight lines x - y = 0, 3x + 2y = 5, x - y = 10 and 2x + 3y = 0

66. Find the equation of the circle passing through the points (0, -1) and (2, 0) and whose centre lies on the line 3x + y = 5



67. Find the equaiton of the circle passing through the points (2, -3) and (3, -2) and whose centre lies on the line 2x - 3y = 8.

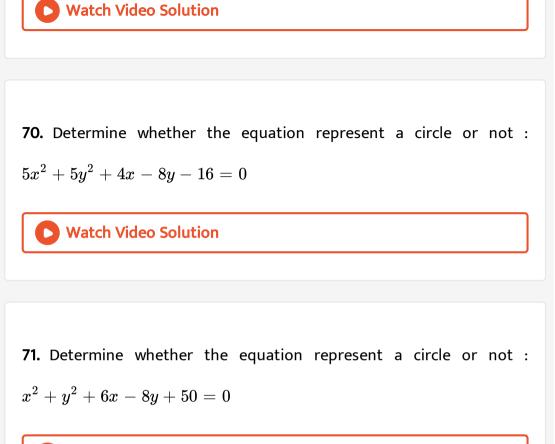
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68. Determine whether the equation represent a circle or not :

$$3x^2 - 3y^2 + 4x - 6y +$$
 10=0`



69. Determine whether the equation represent a circle or not : $5x^2 + 5y^2 + 2xy + 4x - y + 2 = 0$



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72. Determine whether the equation represent a circle, a point or no

$$\mathsf{circle}: x^2 + y^2 + x - y = 0$$

73. Determine whether the equation represent a circle, a point or no circle : $x^2 + y^2 - 6x - 8y + 25 = 0$

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74. Determine whether the equation represent a circle, a point or no

circle : $x^2 + y^2 + 2x + 10y + 26 = 0$

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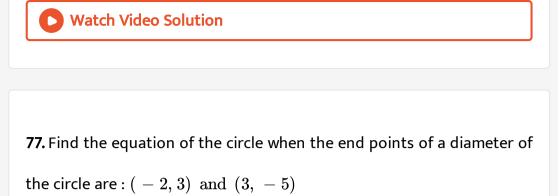
75. Determine whether the equation represent a circle, a point or no

circle : $2x^2 + 2y^2 - 24x + 8y + 120 = 0$

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76. Find the equation of the circle when the end points of a diameter of

the circle are : (3, 4) and (-3, -4)



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78. Find the equation of the circle when the end points of a diameter of

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the circle are : (0, 0) and (2, -4)
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79. Find the equation of the circle when the end points of a diameter of

the circle are : (-2, -3) and (-3, 5)

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80. Find the equation of the circle when the end points of a diameter of the circle are : (p, q) and (r, s)
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81. Find the equation of the circle when the end points of a diameter of

the circle are : (2, 3) and (-1, -3)

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82. Find the equation of the circle when the end points of a diameter of

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the circle are : (3, 2) and (2, 5)
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83. Find the equation of the circle, the end points of whose diameter

are $(2,\ -3) \,\, {
m and} \,\, (\, -2, 4).$ Find its centre and radius.`

84. Find the equaiton of the circle drawn on the intercept between the

axes made by the line 3x + 4y = 12 as a diameter.

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85. Find the equaiton of the circle drawn on the intercept between the

axes made by the line 3x + 4y = 12 as a diameter.

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86. Show that equation of the circle passing through the origin and cutting intercepts a and b on the coordinate axes is $x^2 + y^2 - ax - by = 0$

87. Find the equation of the circle the end points of whose diameter are the centres of the circle : $x^2 + y^2 + 6x - 14y = 1$ and $x^2 + y^2 - 4x + 10y = 2.$

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88. The abscissae of two points A and B are the roots of the equaiton $x^2 + 2x - a^2 = 0$ and the ordinats are the roots of the equaiton $y^2 + 4y - b^2 = 0$. Find the equation of the circle with AB as its diameter. Also find the coordinates of the centre and the length of the radius of the circle.

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89. If (4,1) be an extremity of a diameter of the circle $x^2 + y^2 - 2x + 6y - 15 = 0$, find the coordinates of the other extremity of the diameter.

90. Find the equation of the circle drawn on the diagonal of the rectangle as its diameter whose sides are x=4,x=-2,y=5 and y=-2.

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91. Find the equaiton of the circle drawn on a diagonal of the rectangle

as its diameter whose sides are : x=5, x=8, y=4, y=7

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92. The sides of a square are x = 6, x = 9, y = 3 and y = 6. Find the equation of a circle drawn on the diagonal of the square as its diameter.

93. Find the equation of the circle circumscribing the rectangle whose

sides are : x = 4, x = -5, y = 5, y = -3



94. Find the equation of the circle circumscribing the rectangle whose

sides are : x = 6, x = -3, y = 3, y = -1

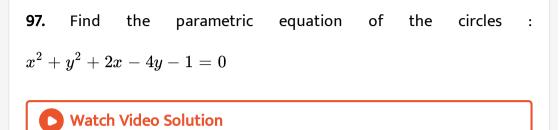
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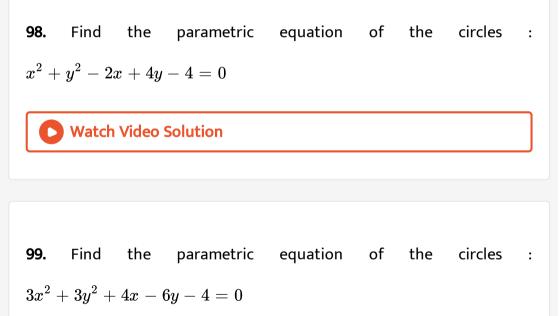
95. Find the equation of the circle circumscribing the rectangle whose

sides are x - 3y = 4, 3x + y = 32, x - 3y = 14 and 3x + y = 62.



96. Find the parametric equation of the circles : $x^2 + y^2 = 9$





100. Find the Cartesian equation of the curves whose parametric equation are : $x=5\cos heta, y=5\sin heta$



101. Find the Cartesian equation of the curves whose parametric equation are : $x = a + c \cos \alpha$, $y = b + c \sin \alpha$

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102. Find the Cartesian equation of the curves whose parametric

equation are : $x = 3 \cos \alpha, y = 3 \sin \alpha$



103. Find the Cartesian equation of the curves whose parametric equation are : $x = 1 + 3\cos\theta$, $y = 2 - 3\sin\theta$

104. Find the Cartesian equation of the curves whose parametric

equation are : $x = \cos \theta + \sin \theta, y = \sin \theta - \cos \theta$

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105. Find the Cartesian equation of the curves whose parametric

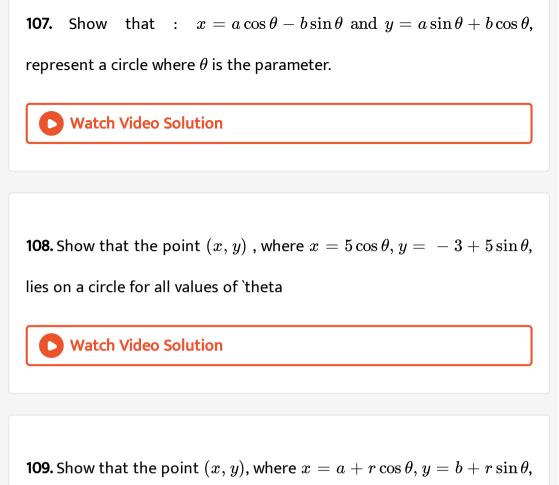
equation are : $x=rac{20t}{4+t^2}, y=rac{5ig(4-t^2ig)}{4+t^2}$

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106. Prove that : $x \cos \theta + y \sin \theta = a$ and $x \sin \theta - y \cos \theta = b$ are the

parametric equations of a circle for all heta satisfying $0 \leq heta < 2\pi$





lies on a circle for all values of θ .