

JEE MAIN MATHEMATICS WORKSHEET

CIRCLES — INDEX

37 JEE Main PYQs | 2020–2024 | One Question Per Page

Q	YEAR / SHIFT	QUESTION TYPE / CONCEPT	FORMAT	PAGE
01	2024 · 9 Apr · Shift 1	Equation of a Circle	MCQ	2
02	2023 · 8 Apr · Shift 1	Equation of a Circle	Numerical Answer	3
03	2022 · 29 Jul · Shift 1	Equation of a Circle	Numerical Answer	4
04	2022 · 27 Jul · Shift 1	Equation of a Circle	MCQ	5
05	2022 · 26 Jul · Shift 2	Equation of a Circle	MCQ	6
06	2022 · 27 Jun · Shift 2	Equation of a Circle	MCQ	7
07	2022 · 26 Jun · Shift 1	Equation of a Circle	MCQ	8
08	2022 · 25 Jun · Shift 1	Equation of a Circle	Numerical Answer	9
09	2022 · 24 Jun · Shift 1	Equation of a Circle	MCQ	10
10	2021 · 27 Aug · Shift 1	Equation of a Circle	Numerical Answer	11
11	2021 · 26 Aug · Shift 2	Equation of a Circle	MCQ	12
12	2021 · 26 Feb · Shift 2	Equation of a Circle	MCQ	13
13	2021 · 26 Feb · Shift 2	Equation of a Circle	Numerical Answer	14
14	2020 · 2 Sep · Shift 1	Equation of a Circle	Numerical Answer	15
15	2023 · 15 Apr · Shift 1	Tangent and Normal	MCQ	16
16	2023 · 8 Apr · Shift 2	Tangent and Normal	MCQ	17
17	2023 · 31 Jan · Shift 1	Tangent and Normal	MCQ	18
18	2022 · 28 Jun · Shift 1	Tangent and Normal	Numerical Answer	19
19	2021 · 16 Mar · Shift 2	Tangent and Normal	MCQ	20
20	2021 · 24 Feb · Shift 2	Tangent and Normal	Numerical Answer	21
21	2020 · 6 Sep · Shift 2	Tangent and Normal	MCQ	22
22	2020 · 8 Jan · Shift 2	Tangent and Normal	MCQ	23
23	2023 · 29 Jan · Shift 2	Chord of Contact	Numerical Answer	24
24	2024 · 5 Apr · Shift 2	Radical Axis	MCQ	25
25	2022 · 28 Jun · Shift 2	Radical Axis	Numerical Answer	26
26	2024 · 9 Apr · Shift 1	Family of Circles	Numerical Answer	27
27	2022 · 28 Jul · Shift 2	Family of Circles	MCQ	28
28	2022 · 25 Jul · Shift 2	Family of Circles	Numerical Answer	29
29	2022 · 30 Jun · Shift 1	Family of Circles	MCQ	30
30	2022 · 27 Jun · Shift 1	Family of Circles	MCQ	31
31	2021 · 18 Mar · Shift 2	Family of Circles	MCQ	32
32	2020 · 4 Sep · Shift 2	Family of Circles	MCQ	33
33	2024 · 1 Feb · Shift 1	Intersection of Two Circles	MCQ	34
34	2024 · 30 Jan · Shift 1	Intersection of Two Circles	MCQ	35
35	2021 · 18 Mar · Shift 1	Intersection of Two Circles	MCQ	36
36	2021 · 17 Mar · Shift 1	Intersection of Two Circles	MCQ	37

Q	YEAR / SHIFT	QUESTION TYPE / CONCEPT	FORMAT	PAGE
37	2020 · 9 Jan · Shift 2	Intersection of Two Circles	Numerical Answer	38

QUESTION 01

Equation of a Circle | MCQ

2024 · 9 Apr · Shift 1

Q1 JEE Main 2024 · 9 Apr · Shift 1

Let a circle passing through $(2, 0)$ have its centre at the point (h, k) . Let (x_c, y_c) be the point of intersection of the lines $3x + 5y = 1$ and $(2 + c)x + 5c^2y = 1$. If $h = \lim_{c \rightarrow 1} x_c$ and $k = \lim_{c \rightarrow 1} y_c$, then the equation of the circle is :

(A) $5x^2 + 5y^2 - 4x - 2y - 12 = 0$

(B) $25x^2 + 25y^2 - 20x + 2y - 60 = 0$

(C) $25x^2 + 25y^2 - 2x + 2y - 60 = 0$

(D) $5x^2 + 5y^2 - 4x + 2y - 12 = 0$

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q01

QUESTION 02

Equation of a Circle | Numerical Answer

2023 · 8 Apr · Shift 1

Q2 JEE Main 2023 · 8 Apr · Shift 1

Consider a circle $C_1 : x^2 + y^2 - 4x - 2y = \alpha - 5$. Let its mirror image in the line $y = 2x + 1$ be another circle $C_2 : 5x^2 + 5y^2 - 10fx - 10gy + 36 = 0$. Let r be the radius of C_2 . Then $\alpha + r$ is equal to _____.

Numerical answer: enter the value.

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q02

QUESTION 03

Equation of a Circle | Numerical Answer

2022 · 29 Jul · Shift 1

Q3 JEE Main 2022 · 29 Jul · Shift 1

Let the mirror image of a circle $c_1 : x^2 + y^2 - 2x - 6y + \alpha = 0$ in line $y = x + 1$ be $c_2 : 5x^2 + 5y^2 + 10gx + 10fy + 38 = 0$. If r is the radius of circle c_2 , then $\alpha + 6r^2$ is equal to _____.

Numerical answer: enter the value.

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q03

QUESTION 04

Equation of a Circle | MCQ

2022 · 27 Jul · Shift 1

Q4 JEE Main 2022 · 27 Jul · Shift 1

If the circle $x^2 + y^2 - 2gx + 6y - 19c = 0, g, c \in \mathbb{R}$ passes through the point $(6, 1)$ and its centre lies on the line $x - 2cy = 8$, then the length of intercept made by the circle on x -axis is :

(A) $\sqrt{11}$ **(B)** 4**(C)** 3**(D)** $2\sqrt{23}$

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q04

QUESTION 05

Equation of a Circle | MCQ

2022 · 26 Jul · Shift 2

Q5 JEE Main 2022 · 26 Jul · Shift 2

Let the abscissae of the two points P and Q on a circle be the roots of $x^2 - 4x - 6 = 0$ and the ordinates of P and Q be the roots of $y^2 + 2y - 7 = 0$. If PQ is a diameter of the circle $x^2 + y^2 + 2ax + 2by + c = 0$, then the value of $(a + b - c)$ is _____.

(A) 12**(B)** 13**(C)** 14**(D)** 16

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q05

QUESTION 06

Equation of a Circle | MCQ

2022 · 27 Jun · Shift 2

Q6 JEE Main 2022 · 27 Jun · Shift 2

The set of values of k , for which the circle $C : 4x^2 + 4y^2 - 12x + 8y + k = 0$ lies inside the fourth quadrant and the point $(1, -\frac{1}{3})$ lies on or inside the circle C , is :

(A) an empty set**(B)** $(6, \frac{65}{9}]$ **(C)** $[\frac{80}{9}, 10)$ **(D)** $(9, \frac{92}{9}]$

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q06

QUESTION 07

Equation of a Circle | MCQ

2022 · 26 Jun · Shift 1

Q7 JEE Main 2022 · 26 Jun · Shift 1

Let C be a circle passing through the points A(2, -1) and B(3, 4). The line segment AB is not a diameter of C. If r is the radius of C and its centre lies on the circle $(x - 5)^2 + (y - 1)^2 = \frac{13}{2}$, then r^2 is equal to :

(A) 32**(B)** $\frac{65}{2}$ **(C)** $\frac{61}{2}$ **(D)** 30

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q07

QUESTION 08

Equation of a Circle | Numerical Answer

2022 · 25 Jun · Shift 1

Q8 JEE Main 2022 · 25 Jun · Shift 1

Let the abscissae of the two points P and Q be the roots of $2x^2 - rx + p = 0$ and the ordinates of P and Q be the roots of $x^2 - sx - q = 0$. If the equation of the circle described on PQ as diameter is $2(x^2 + y^2) - 11x - 14y - 22 = 0$, then $2r + s - 2q + p$ is equal to _____.

Numerical answer: enter the value.

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q08

QUESTION 09

Equation of a Circle | MCQ

2022 · 24 Jun · Shift 1

Q9 JEE Main 2022 · 24 Jun · Shift 1

Let $x^2 + y^2 + Ax + By + C = 0$ be a circle passing through $(0, 6)$ and touching the parabola $y = x^2$ at $(2, 4)$. Then $A + C$ is equal to _____.

(A) 16**(B)** $88/5$ **(C)** 72**(D)** -8

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q09

QUESTION 10

Equation of a Circle | Numerical Answer

2021 · 27 Aug · Shift 1

Q10 JEE Main 2021 · 27 Aug · Shift 1

Let the equation $x^2 + y^2 + px + (1 - p)y + 5 = 0$ represent circles of varying radius $r \in (0, 5]$. Then the number of elements in the set $S = \{q : q = p^2 \text{ and } q \text{ is an integer}\}$ is _____.

Numerical answer: enter the value.

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q10

QUESTION 11

Equation of a Circle | MCQ

2021 · 26 Aug · Shift 2

Q11 JEE Main 2021 · 26 Aug · Shift 2

A circle C touches the line $x = 2y$ at the point $(2, 1)$ and intersects the circle

$C_1 : x^2 + y^2 + 2y - 5 = 0$ at two points P and Q such that PQ is a diameter of C_1 . Then the diameter of C is :

(A) $7\sqrt{5}$ **(B)** 15**(C)** $\sqrt{285}$ **(D)** $4\sqrt{15}$

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q11

QUESTION 12

Equation of a Circle | MCQ

2021 · 26 Feb · Shift 2

Q12 JEE Main 2021 · 26 Feb · Shift 2

If the locus of the mid-point of the line segment from the point (3, 2) to a point on the circle, $x^2 + y^2 = 1$ is a circle of radius r , then r is equal to :

(A) $\frac{1}{4}$ **(B)** $\frac{1}{2}$ **(C)** 1**(D)** $\frac{1}{3}$ **OBSERVED TRICK / MY KEY LEARNING**

Write the key idea, shortcut, mistake, or learning point.

Q12

QUESTION 13

Equation of a Circle | Numerical Answer

2021 · 26 Feb · Shift 2

Q13 JEE Main 2021 · 26 Feb · Shift 2

Let the normals at all the points on a given curve pass through a fixed point (a, b) . If the curve passes through $(3, -3)$ and $(4, -2\sqrt{2})$, and given that $a - 2\sqrt{2}b = 3$, then $(a^2 + b^2 + ab)$ is equal to _____.

Numerical answer: enter the value.

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q13

QUESTION 14

Equation of a Circle | Numerical Answer

2020 · 2 Sep · Shift 1

Q14 JEE Main 2020 · 2 Sep · Shift 1

The number of integral values of k for which the line, $3x + 4y = k$ intersects the circle, $x^2 + y^2 - 2x - 4y + 4 = 0$ at two distinct points is _____.

Numerical answer: enter the value.

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q14

QUESTION 15

Tangent and Normal | MCQ

2023 · 15 Apr · Shift 1

Q15 JEE Main 2023 · 15 Apr · Shift 1

The number of common tangents, to the circles

$$x^2 + y^2 - 18x - 15y + 131 = 0$$

and $x^2 + y^2 - 6x - 6y - 7 = 0$, is :**(A)** 4**(B)** 2**(C)** 3**(D)** 1

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q15

QUESTION 16

Tangent and Normal | MCQ

2023 · 8 Apr · Shift 2

Q16 JEE Main 2023 · 8 Apr · Shift 2

Let O be the origin and OP and OQ be the tangents to the circle $x^2 + y^2 - 6x + 4y + 8 = 0$ at the points P and Q on it. If the circumcircle of the triangle OPQ passes through the point $(\alpha, \frac{1}{2})$, then a value of α is :

(A) 1**(B)** $-\frac{1}{2}$ **(C)** $\frac{5}{2}$ **(D)** $\frac{3}{2}$

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q16

QUESTION 17

Tangent and Normal | MCQ

2023 · 31 Jan · Shift 1

Q17 JEE Main 2023 · 31 Jan · Shift 1

Let a circle C_1 be obtained on rolling the circle $x^2 + y^2 - 4x - 6y + 11 = 0$ upwards 4 units on the tangent T to it at the point $(3, 2)$. Let C_2 be the image of C_1 in T . Let A and B be the centers of circles C_1 and C_2 respectively, and M and N be respectively the feet of perpendiculars drawn from A and B on the x -axis. Then the area of the trapezium $AMNB$ is :

(A) $2(2 + \sqrt{2})$

(B) $4(1 + \sqrt{2})$

(C) $3 + 2\sqrt{2}$

(D) $2(1 + \sqrt{2})$

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q17

QUESTION 18

Tangent and Normal | Numerical Answer

2022 · 28 Jun · Shift 1

Q18 JEE Main 2022 · 28 Jun · Shift 1

Let the lines $y + 2x = \sqrt{11} + 7\sqrt{7}$ and $2y + x = 2\sqrt{11} + 6\sqrt{7}$ be normal to a circle $C : (x - h)^2 + (y - k)^2 = r^2$. If the line $\sqrt{11}y - 3x = \frac{5\sqrt{77}}{3} + 11$ is tangent to the circle C, then the value of $(5h - 8k)^2 + 5r^2$ is equal to _____.

Numerical answer: enter the value.

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q18

QUESTION 19

Tangent and Normal | MCQ

2021 · 16 Mar · Shift 2

Q19 JEE Main 2021 · 16 Mar · Shift 2

Let the lengths of intercepts on x-axis and y-axis made by the circle

$x^2 + y^2 + ax + 2ay + c = 0$, ($a < 0$) be $2\sqrt{2}$ and $2\sqrt{5}$, respectively. Then the shortest distance from origin to a tangent to this circle which is perpendicular to the line $x + 2y = 0$, is equal to :

(A) $\sqrt{10}$ **(B)** $\sqrt{6}$ **(C)** $\sqrt{11}$ **(D)** $\sqrt{7}$

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q19

QUESTION 20

Tangent and Normal | Numerical Answer

2021 · 24 Feb · Shift 2

Q20 JEE Main 2021 · 24 Feb · Shift 2

If the area of the triangle formed by the positive x-axis, the normal and the tangent to the circle $(x - 2)^2 + (y - 3)^2 = 25$ at the point (5, 7) is A, then 24A is equal to _____.

Numerical answer: enter the value.

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q20

QUESTION 21

Tangent and Normal | MCQ

2020 · 6 Sep · Shift 2

Q21 JEE Main 2020 · 6 Sep · Shift 2

The centre of the circle passing through the point $(0, 1)$ and touching the parabola $y = x^2$ at the point $(2, 4)$ is :

- (A) $\left(\frac{6}{5}, \frac{53}{10}\right)$
(B) $\left(\frac{3}{10}, \frac{16}{5}\right)$
(C) $\left(\frac{-53}{10}, \frac{16}{5}\right)$
(D) $\left(\frac{-16}{5}, \frac{53}{10}\right)$

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q21

QUESTION 22

Tangent and Normal | MCQ

2020 · 8 Jan · Shift 2

Q22 JEE Main 2020 · 8 Jan · Shift 2

If a line, $y = mx + c$ is a tangent to the circle, $(x - 3)^2 + y^2 = 1$ and it is perpendicular to a line L_1 , where L_1 is the tangent to the circle, $x^2 + y^2 = 1$ at the point $\left(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right)$, then :

(A) $c^2 + 6c + 7 = 0$

(B) $c^2 - 7c + 6 = 0$

(C) $c^2 - 6c + 7 = 0$

(D) $c^2 + 7c + 6 = 0$

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q22

QUESTION 23

Chord of Contact | Numerical Answer

2023 · 29 Jan · Shift 2

Q23 JEE Main 2023 · 29 Jan · Shift 2

A circle with centre $(2, 3)$ and radius 4 intersects the line $x + y = 3$ at the points P and Q. If the tangents at P and Q intersect at the point $S(\alpha, \beta)$, then $4\alpha - 7\beta$ is equal to _____.

Numerical answer: enter the value.

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q23

QUESTION 24

Radical Axis | MCQ

2024 · 5 Apr · Shift 2

Q24 JEE Main 2024 · 5 Apr · Shift 2

Let the circle $C_1 : x^2 + y^2 - 2(x + y) + 1 = 0$ and C_2 be a circle having centre at $(-1, 0)$ and radius 2. If the line of the common chord of C_1 and C_2 intersects the y-axis at the point P, then the square of the distance of P from the centre of C_1 is:

(A) 4**(B)** 6**(C)** 2**(D)** 1

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q24

QUESTION 25

Radical Axis | Numerical Answer

2022 · 28 Jun · Shift 2

Q25 JEE Main 2022 · 28 Jun · Shift 2

If one of the diameters of the circle $x^2 + y^2 - 2\sqrt{2}x - 6\sqrt{2}y + 14 = 0$ is a chord of the circle $(x - 2\sqrt{2})^2 + (y - 2\sqrt{2})^2 = r^2$, then the value of r^2 is equal to _____.

Numerical answer: enter the value.

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q25

QUESTION 26

Family of Circles | Numerical Answer

2024 · 9 Apr · Shift 1

Q26 JEE Main 2024 · 9 Apr · Shift 1

Let the centre of a circle, passing through the points $(0, 0)$, $(1, 0)$ and touching the circle $x^2 + y^2 = 9$, be (h, k) . Then for all possible values of the coordinates of the centre (h, k) , $4(h^2 + k^2)$ is equal to _____.

Numerical answer: enter the value.

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q26

QUESTION 27

Family of Circles | MCQ

2022 · 28 Jul · Shift 2

Q27 JEE Main 2022 · 28 Jul · Shift 2

The differential equation of the family of circles passing through the points $(0, 2)$ and $(0, -2)$ is :

(A) $2xy \frac{dy}{dx} + (x^2 - y^2 + 4) = 0$

(B) $2xy \frac{dy}{dx} + (x^2 + y^2 - 4) = 0$

(C) $2xy \frac{dy}{dx} + (y^2 - x^2 + 4) = 0$

(D) $2xy \frac{dy}{dx} - (x^2 - y^2 + 4) = 0$

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q27

QUESTION 28

Family of Circles | Numerical Answer

2022 · 25 Jul · Shift 2

Q28 JEE Main 2022 · 25 Jul · Shift 2If the circles $x^2 + y^2 + 6x + 8y + 16 = 0$ and

$$x^2 + y^2 + 2(3 - \sqrt{3})x + 2(4 - \sqrt{6})y = k + 6\sqrt{3} + 8\sqrt{6}$$

 $, k > 0$, touch internally at the point $P(\alpha, \beta)$, then $(\alpha + \sqrt{3})^2 + (\beta + \sqrt{6})^2$ is equal to _____.

Numerical answer: enter the value.

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q28

QUESTION 29

Family of Circles | MCQ

2022 · 30 Jun · Shift 1

Q29 JEE Main 2022 · 30 Jun · Shift 1

Let $\frac{dy}{dx} = \frac{ax - by + a}{bx + cy + a}$, $a, b, c \in R$, represents a circle with center (α, β) . Then, $\alpha + 2\beta$ is equal to :

(A) -1 **(B)** 0 **(C)** 1 **(D)** 2 **OBSERVED TRICK / MY KEY LEARNING**

Write the key idea, shortcut, mistake, or learning point.

Q29

QUESTION 30

Family of Circles | MCQ

2022 · 27 Jun · Shift 1

Q30 JEE Main 2022 · 27 Jun · Shift 1

Let $\frac{dy}{dx} = \frac{ax-by+a}{bx+cy+a}$, where a, b, c are constants, represent a circle passing through the point $(2, 5)$. Then the shortest distance of the point $(11, 6)$ from this circle is :

(A) 10**(B)** 8**(C)** 7**(D)** 5

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q30

QUESTION 31

Family of Circles | MCQ

2021 · 18 Mar · Shift 2

Q31 JEE Main 2021 · 18 Mar · Shift 2

Let $S_1 : x^2 + y^2 = 9$ and $S_2 : (x - 2)^2 + y^2 = 1$. Then the locus of center of a variable circle S which touches S_1 internally and S_2 externally always passes through the points :

(A) $\left(\frac{1}{2}, \pm \frac{\sqrt{5}}{2}\right)$

(B) $(1, \pm 2)$

(C) $\left(2, \pm \frac{3}{2}\right)$

(D) $(0, \pm \sqrt{3})$

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q31

QUESTION 32

Family of Circles | MCQ

2020 · 4 Sep · Shift 2

Q32 JEE Main 2020 · 4 Sep · Shift 2

The circle passing through the intersection of the circles,
 $x^2 + y^2 - 6x = 0$ and $x^2 + y^2 - 4y = 0$, having its centre on
the line, $2x - 3y + 12 = 0$, also passes through the point :

(A) $(-3, 1)$ **(B)** $(1, -3)$ **(C)** $(-1, 3)$ **(D)** $(-3, 6)$

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q32

QUESTION 33

Intersection of Two Circles | MCQ

2024 · 1 Feb · Shift 1

Q33 JEE Main 2024 · 1 Feb · Shift 1

Let $C : x^2 + y^2 = 4$ and $C' : x^2 + y^2 - 4\lambda x + 9 = 0$ be two circles. If the set of all values of λ so that the circles C and C' intersect at two distinct points, is $R - [a, b]$, then the point $(8a + 12, 16b - 20)$ lies on the curve :

(A) $x^2 + 2y^2 - 5x + 6y = 3$

(B) $5x^2 - y = -11$

(C) $x^2 - 4y^2 = 7$

(D) $6x^2 + y^2 = 42$

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q33

QUESTION 34

Intersection of Two Circles | MCQ

2024 · 30 Jan · Shift 1

Q34 JEE Main 2024 · 30 Jan · Shift 1

If the circles $(x + 1)^2 + (y + 2)^2 = r^2$ and $x^2 + y^2 - 4x - 4y + 4 = 0$ intersect at exactly two distinct points, then

(A) $\frac{1}{2} < r < 7$

(B) $3 < r < 7$

(C) $5 < r < 9$

(D) $0 < r < 7$

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q34

QUESTION 35

Intersection of Two Circles | MCQ

2021 · 18 Mar · Shift 1

Q35 JEE Main 2021 · 18 Mar · Shift 1

Choose the correct statement about two circles whose equations are given below :

$$x^2 + y^2 - 10x - 10y + 41 = 0$$

$$x^2 + y^2 - 22x - 10y + 137 = 0$$

(A) circles have same centre**(B)** circles have no meeting point**(C)** circles have only one meeting point**(D)** circles have two meeting points

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q35

QUESTION 36

Intersection of Two Circles | MCQ

2021 · 17 Mar · Shift 1

Q36 JEE Main 2021 · 17 Mar · Shift 1

Choose the incorrect statement about the two circles whose equations are given below :

$$x^2 + y^2 - 10x - 10y + 41 = 0 \text{ and}$$

$$x^2 + y^2 - 16x - 10y + 80 = 0$$

- (A) Distance between two centres is the average of radii of both the circles.
- (B) Both circles pass through the centre of each other.
- (C) Circles have two intersection points.
- (D) Both circle's centers lie inside region of one another.

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q36

QUESTION 37

Intersection of Two Circles | Numerical Answer

2020 · 9 Jan · Shift 2

Q37 JEE Main 2020 · 9 Jan · Shift 2If the curves, $x^2 - 6x + y^2 + 8 = 0$ and $x^2 - 8y + y^2 + 16 - k = 0$, ($k > 0$) touch each other at a point, then the largest value of k is _____.*Numerical answer: enter the value.*

OBSERVED TRICK / MY KEY LEARNING

Write the key idea, shortcut, mistake, or learning point.

Q37