

PYQSide

JEE MAIN CONIC SECTIONS — PARABOLA: STANDARD EQUATION, FOCUS, DIRECTRIX, LATUS RECTUM — PYQS

Max. Marks: 60

Questions: 15

Section A (MCQ)

- Q.1** Let one root of the quadratic equation in x :
 $(k^2 - 15k + 27)x^2 + 9(k - 1)x + 18 = 0$
 be twice the other. Then the length of the latus rectum of the parabola $y^2 = 6kx$ is equal to :

[JEE Main 2026 (Online) 6th April Morning Shift]

- (1) 4 (2) 6 (3) 8 (4) 12

Scan or tap for the full solution



- Q.2** Let the directrix of the parabola $P: y^2 = 8x$, cut x -axis at the point A. Let $B(\alpha, \beta)$, $\alpha > 1$, be a point on P such that the slope of AB is $3/5$. If BC is a focal chord of P, then six times the area of $\triangle ABC$ is :

[JEE Main 2026 (Online) 5th April Evening Shift]

- (1) 80 (2) 160 (3) 174 (4) 192

Scan or tap for the full solution



- Q.3** Let the parabola $y = x^2 + px + q$ passing through the point $(1, -1)$ be such that the distance between its vertex and the x -axis is minimum. Then the value of $p^2 + q^2$ is :

[JEE Main 2026 (Online) 2nd April Evening Shift]

- (1) 2 (2) 4 (3) 5 (4) 8

Scan or tap for the full solution



- Q.4** Let A be the focus of the parabola $y^2 = 8x$. Let the line $y = mx + c$ intersect the parabola at two distinct points B and C. If the centroid of the triangle ABC is $(\frac{7}{3}, \frac{4}{3})$, then $(BC)^2$ is equal to :

[JEE Main 2026 (Online) 28th January Evening Shift]

- (1) 89 (2) 80 (3) 32 (4) 41

Scan or tap for the full solution



- Q.5** Let the image of parabola $x^2 = 4y$, in the line $x - y = 1$ be $(y + a)^2 = b(x - c)$, $a, b, c \in \mathbb{N}$. Then $a + b + c$ is equal to

[JEE Main 2026 (Online) 24th January Evening Shift]

- (1) 12 (2) 8 (3) 6 (4) 4

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- Q.6** An equilateral triangle OAB is inscribed in the parabola $y^2 = 4x$ with the vertex O at the vertex of the parabola. Then the minimum distance of the circle having AB as a diameter from the origin is

[JEE Main 2026 (Online) 23rd January Evening Shift]

- (1) $2(8 - 3\sqrt{3})$ (2) $4(6 + \sqrt{3})$
 (3) $4(3 - \sqrt{3})$ (4) $2(3 + \sqrt{3})$

Scan or tap for the full solution



- Q.7** If the chord joining the points $P_1(x_1, y_1)$ and $P_2(x_2, y_2)$ on the parabola $y^2 = 12x$ subtends a right angle at the vertex of the parabola, then $x_1x_2 - y_1y_2$ is equal to

[JEE Main 2026 (Online) 22nd January Morning Shift]

- (1) 280 (2) 288 (3) 292 (4) 284

Scan or tap for the full solution



- Q.8** Let one end of a focal chord of the parabola $y^2 = 16x$ be $(16, 16)$. If $P(\alpha, \beta)$ divides this focal chord internally in the ratio 5:2, then the minimum value of $\alpha + \beta$ is equal to:

[JEE Main 2026 (Online) 21st January Evening Shift]

- (1) 5 (2) 7 (3) 22 (4) 16

Scan or tap for the full solution



- Q.9** Let P be the parabola, whose focus is $(-2, 1)$ and directrix is $2x + y + 2 = 0$. Then the sum of the ordinates of the points on P, whose abscissa is -2 , is

[JEE Main 2025 (Online) 7th April Morning Shift]

- (1) $\frac{5}{2}$ (2) $\frac{3}{2}$ (3) $\frac{3}{4}$ (4) $\frac{1}{4}$

Scan or tap for the full solution



- Q.10** The axis of a parabola is the line $y = x$ and its vertex and focus are in the first quadrant at distances $\sqrt{2}$ and $2\sqrt{2}$ units from the origin, respectively. If the point $(1, k)$ lies on the parabola, then a possible value of k is :

[JEE Main 2025 (Online) 4th April Evening Shift]

- (1) 8 (2) 3 (3) 9 (4) 4

Scan or tap for the full solution



- Q.11** Let the focal chord PQ of the parabola $y^2 = 4x$ make an angle of 60° with the positive x axis, where P lies in the first quadrant. If the circle, whose one diameter is PS, S being the focus of the parabola, touches the y-axis at the point $(0, \alpha)$, then $5\alpha^2$ is equal to:

[JEE Main 2025 (Online) 2nd April Morning Shift]

- (1) 15 (2) 25 (3) 20 (4) 30

Scan or tap for the full solution 

- Q.12** Let the point P of the focal chord PQ of the parabola $y^2 = 16x$ be $(1, -4)$. If the focus of the parabola divides the chord PQ in the ratio $m:n$, $\gcd(m, n) = 1$, then $m^2 + n^2$ is equal to :

[JEE Main 2025 (Online) 2nd April Evening Shift]

- (1) 17 (2) 37 (3) 10 (4) 26

Scan or tap for the full solution 

- Q.13** Two parabolas have the same focus $(4, 3)$ and their directrices are the x-axis and the y-axis, respectively. If these parabolas intersect at the points A and B, then $(AB)^2$ is equal to :

[JEE Main 2025 (Online) 29th January Morning Shift]

- (1) 384 (2) 392 (3) 96 (4) 192

Scan or tap for the full solution 

- Q.14** Let ABCD be a trapezium whose vertices lie on the parabola $y^2 = 4x$. Let the sides AD and BC of the trapezium be parallel to y-axis. If the diagonal AC is of length $\frac{25}{4}$ and it passes through the point $(1, 0)$, then the area of ABCD is

[JEE Main 2025 (Online) 28th January Morning Shift]

- (1)
- $\frac{75}{8}$
- (2)
- $\frac{125}{8}$
- (3)
- $\frac{25}{2}$
- (4)
- $\frac{75}{4}$

Scan or tap for the full solution 

Section B (Numerical)

- Q.15** Let A and B be the two points of intersection of the line $y + 5 = 0$ and the mirror image of the parabola $y^2 = 4x$ with respect to the line $x + y + 4 = 0$. If d denotes the distance between A and B, and a denotes the area of $\triangle SAB$, where S is the focus of the parabola $y^2 = 4x$, then the value of $(a + d)$ is _____.

[JEE Main 2025 (Online) 28th January Evening Shift]

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ANSWER KEY

Section A (MCQ)

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	4	2	2	2	3	3	2	2	2	3	1
Ques.	12	13	14								
Ans.	1	4	4								

Section B (Numerical)

Ques.	15										
Ans.	14										