MATHS

BOOKS - PEARSON IIT JEE FOUNDATION

LOCUS

Example

1. Show that the locus of a point, equidistant from the endpoints of a line segment, is the perpendicular bisector of the segment

▶ **Watch Video Solution**

2. Show that the locus of a point, equidistant from two intersecting lines in the plane, is a pair of lines bisecting the angles formed by the given lines.

3. Find the equation of the locus of a point that forms a triangle of area 5 units with the points $A(2, 3)$ and $B(- 1, 4)$.

Very Short Answer Question

1. Centroid divides the median from the vertex in the ratio_____

2. Any point on the perpendicular bisector of a line segment joining two point is _____ from the two points.

3. What is the locus of a point of a plane, which is at a distance of p units from the circle of radius q units $(p = q)$?

4. If A and B are two fixed points, then the locus of a point P, such that $\angle APB = 90°$? is _____

5. The locus of the point equidistant (in a plane) from the three vertices of a triangle is ____

6. The locus of the point in a plane which is equidistant from two intersecting lines is ____

7. The line segment from the vertex of a triangle perpendicular to its opposite side is called _____

> ▶ Watch Video Solution

8. The path traced out by a moving Point which moves according to some given geometrical conditions is _____

> ▶ Watch Video Solution

9. Is the statement In $\triangle ABC$ a point, equidistant from AB and AC lies on the median true?

> ▶ Watch Video Solution

10. The path of a freely stone is _____

11. The orthocentre of a right triangle is the _____

12. Line joining the mid-point of a side of a triangle to opposite vertex is

13. The locus of the centre of the circles (in a plane) passing through two given points is the _____ of the line segment joining the two points.

14. The circum-centre of a right triangle always lies _____

15. The locus of the tip of the hour hand is _____

▶ **Watch Video Solution**

Short Answer Question

1. Find the locus of the vertex of a triangle with fixed base and having constant area

▶ **Watch Video Solution**

2. Find the locus of the centre of a circle passing through two fixed point A and B.

▶ **View Text Solution**

3. Let A and B be two fixed points in a plane. Find the locus of a point P such that $PA^2 + PB^2 = AB^2$.

▶ View Text Solution

4. Find the locus of the point P, such that TP : MP = 3 : 2, where T is (-2,3) and M is (4, -5).

▶ View Text Solution

5. Find the locus of the point which is equidistant from sides AB and AD of a rhombus ABCD.

▶ Watch Video Solution

6. In the following figure (not to scale), ABC is a right isosceles triangle, right- angle at B and $BD \perp AC$. If the triangle ABC is rotated about the

hypotenuse, then find the locus of the triangle ABC. ltbr gt ltimg src="https://d10lpgp6xz60nq.cloudfront.net/physics_images/PS_MATH_IX_C15_ width="80%"gt

> ▶ **Watch Video Solution**

7. If ZQ and RU be two lines intersecting at point E, then find the locus of a point moving in the interior of $\angle UWZ$, such that the sum of its distance from the lines ZQ and RU is b units

> ▶ **Watch Video Solution**

8. Find the locus of the point which is equidistant from the sides AB and AC of triangle ABC.

> ▶ **Watch Video Solution**

Easy Question

1. In a square ABCD, if A and B are (5,1) and (7,1) respectively then what is the locus of the mid point of diagonal AC?

2. If P (x,y) and Q (1,4) are the points on the circle whose centre is :C(5,7) and radius is 5 cm, then find the locus of P.

3. If two lines intersect at P at right angle and pass through A(1,1) and B(1,0) respectively then what is the locus of P?

4. In $\triangle PAB$ D,E and F are the mid-points of PA, AB and BP respectively. The area of DEF is 8 sq.units. If A is (2,5) and B is (3,4), then what is the locus of P?

5. If P is a point on the circle with AB as a diameter, where A and B are (0, 2) and (2,4) respectively, then the locus of P is ____

Level 1

1. The locus of point equidistant from three fixed points is a single point. The three points are_____

    A. collinear

    B. non-collinear

    C. coincidental

    D. None of these

Answer: B

2. The locus of a point moving in a space which is at a constant distance from a fixed point in space is called a ____

    A. square

    B. sphere

    C. circle

    D. triangle

Answer: B

3. The locus of the centre of the circle that touch a given circle internally is _____

    A. straight line

B. hellix

C. circle

D. None of these

Answer: C

▶ **Watch Video Solution**

---

4. In $\triangle ABC$, $\angle A = \angle B + \angle C$, then the circum centre is at _____

A. A

B. B

C. C

D. the mid points of BC

Answer: D

▶ **Watch Video Solution**

5. The locus of a point equidistant from the points does not exists. This implies that the three points are _____

    A. collinear

    B. non-collinear

    C. coincidental

    D. None of these

Answer: A

▶ **Watch Video Solution**

---

6. The loucs of a point which is a equidistant from two non-intersecting lines l and m is a _____

    A. straight line parallel to the line l

    B. Straight line parallel to the line m

    C. Straight line parallel to the line l and m and midway between them

D. straight line that intersects both the line l and m

Answer: C

▶ **Watch Video Solution**

7. The locus of a point which is at a constant distance k from Y-axis is
_____

A. $x = \pm k$

B. $Y = \pm k$

C. $x = 0$

D. $Y = 0$

Answer: A

▶ **Watch Video Solution**

8. The locus of the centre of a wheel rolling on a straight road is a _____

   A. concentric circle

   B. straight line

   C. curve path

   D. parabola

Answer: B

▶ **Watch Video Solution**

---

9. If A and B are two fixed point, then the loucs of a point P, such that $PA^2 + PB^2 = AB^2$ is a/an _____

   A. circle with AB as the diameter

   B. right triangle with $\angle P = 90°$

   C. semi with AB as the diameter

   D. circle with AB as the diameter, excluding points A and B
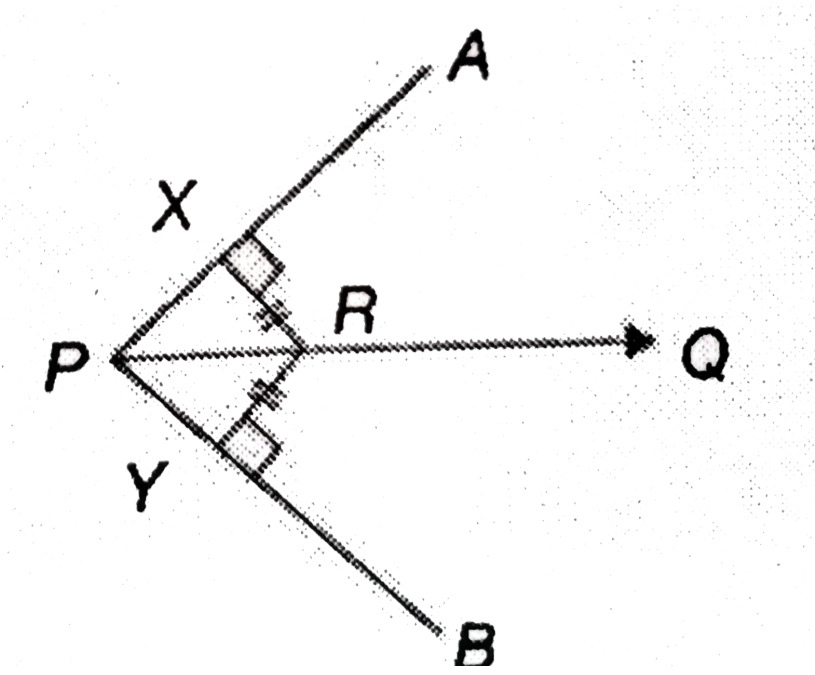
Answer: D

10. In the figure, $\overline{RX} \perp \overline{PA}$, $\overline{RY} \perp \overline{PB}$, $RX = RY$ and $\angle APR = 70°$.
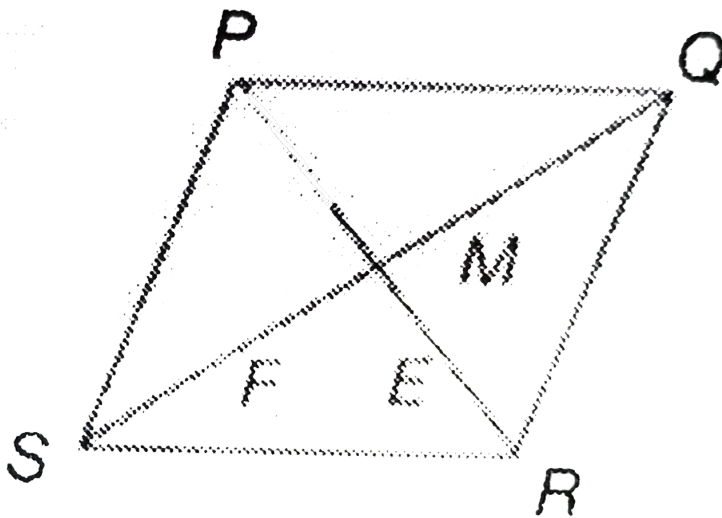
Find $\angle APQ$

A. $70°$

B. $140°$

C. $35°$

D. $50°$

11. Consider a point M inside a quadrillated PQRS. If M be the point of intersection of angle bisectors PE and QF, then _____

A. M is nearer to $\overline{PS}$ than to $\overline{QR}$

B. M is equidistant from opposite sides $\overline{PS}$ and $\overline{QR}$

C. M is nearer to $\overline{QR}$ than to $\overline{PS}$

D. M is equitistant from oppoiste sides $\overline{PQ}$ and $\overline{SR}$

Answer: B

> ▶ Watch Video Solution

---

12. The loucs of the point which is equidistant from the three determined by the sides of a triangles is _____

    A. the in-centre

    B. the ex-centre

    C. the ortho-centre

    D. either (a) or (b)

Answer: D

> ▶ Watch Video Solution

13. Find the locus of any fixed point on the circumference of a certain when the coin is rolling on a straight path.

A. Circle

B. straight line

C. sphere

D. Helix

Answer: D

▶ Watch Video Solution

14. The locus of a point which is equidistant from the coordinate axes can be a ____

A. line making a non-zero intercept on X-axis

B. line making a non-zero intercept on Y-axis

C. line passing through the origin making an angles of $45°$ with X-axis

D. None of the above

Answer: C

15. The locus of a point equidistant secting line PQ and RS, and at a distance of 10 cm from their point of intersection O is _____

A. four points lying on the angle bisectors at a distance of 5 cm from

O

B. Two points lying on the angles bisectors at a distance of 10 cm from

O

C. Four points lying on the angle bisectors at a distance of 10 cm from

O

D. Two points lying on the triangles bisectors at a distance of 5 cm
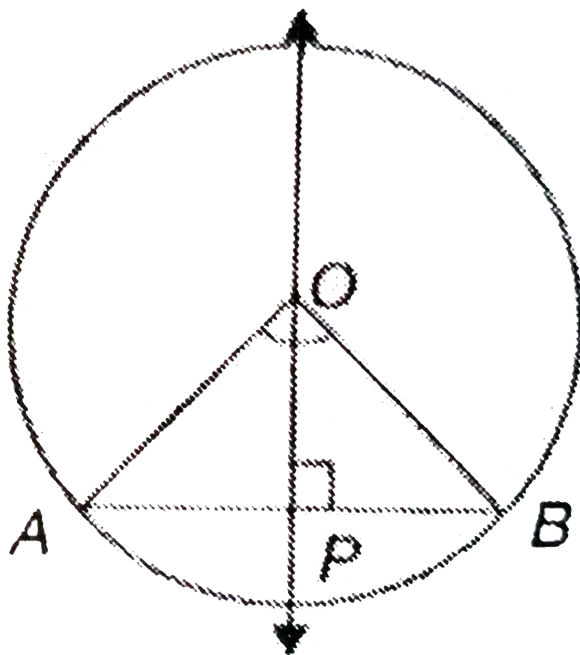
from O

Answer: C

Level 2

1. In the figure following, O is the centre of the circle and $\overline{AL} \perp \overline{MN}$. If $\angle AOB = 90°$, then find $\angle AOP$

A. 60°

B. 20°

C. 30°

D. 45(○)

Answer: D

▶ Watch Video Solution

2. The solid formed when a right triangle is rotated about one of the sids
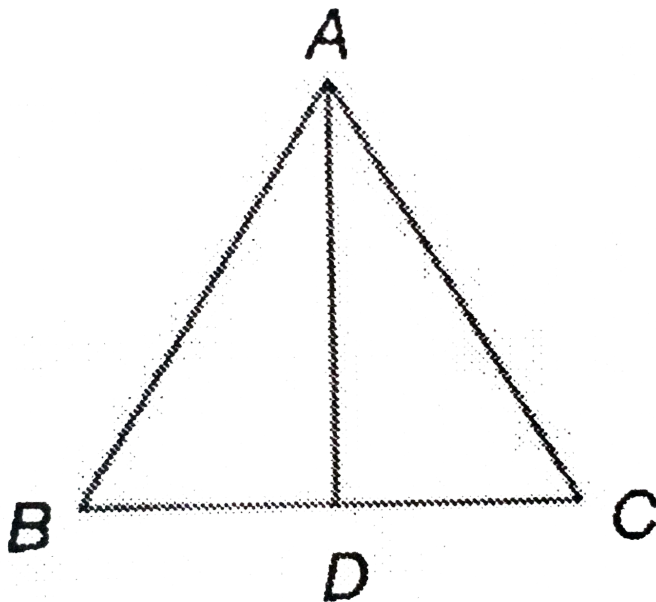
containing the right angle in a ____

A. prism

B. cylinder

C. cone

D. sphere

Answer: C

3. In the figure (not to scale) AB = AC and BD = CD. Find $\angle ADB$

A. $60°$

B. $90°$

C. $120°$

D. Cannot be determined

Answer: B

---

4. A part of the locus of a point P, which is equidstant from two intersecting line as $+ by + c = 0$ and $px + qy + r = 0$

A. $(a - p)x + (b - q)y + (c - x) = 0$

B. $ap + qby + cy = 0$

C. $\sqrt{a^2 + b^2}(px + qy + r) - \sqrt{p^2 + q^2}(ax + by + a)$

D. None of these

Answer: C

---

5. If PAB is a triangle of area 4 sq. units and A is (2,5) and B is (3,4) then part of the locus of P is _____

A. $x - y + 15 = 0$

B. $x - y - 15 = 0$

C. $x + y - 15 = 0$

D. $x + y + 15 = 0$

Answer: C

▶ **Watch Video Solution**

6. Given, triangle PBC and parallelogram ABCD lie between the same parallel. On the same base, BC and the are of parallelogram is 2 sq. unit. The points B and C are (2,4) and (4,4) respectively. Which of the following lines is a part of the locus of P?

A. $y = 4$

B. $y = 7$

C. $y = 5$

D. $y = 6$

Answer: C

7. If PAB is a triangle in which $\angle B = 90°$ and $A(1, 1)$ and $B(0.1)$ then the locus of P is _____.

   A. $y = 0$

   B. $xy = 0$

   C. $x = y$

   D. $x = 0$

Answer: D

8. The locus of P whose distance from the X-axis is thrice the distance from the line X = 5 is _____

A. $x - y - 5 = 0$

B. $3x - y - 15 = 0$

C. $3x + y + 15 = 0$

D. $x + y + 15 = 0$

Answer: B

▶ **Watch Video Solution**

9. Two of the vertices of a triangle ABC and A (1,1) B-1,3) and the area of $\triangle ABC$ is 6 sq units. If P is the centroid of the $\triangle ABC$, then find the locus of P.

A. $2x - y + 1 = 0$

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

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

D. Both (a) and (b)

Answer: D

---

10. In a circle with radius 25 cm, what is the area of the region determind by the locus of the mid-points of chords of length 48 cm?

   A. $154cm^2$

   B. $254cm^2$

   C. $2cm^2$

   D. None of these

Answer: A

---

11. The locus of the centre of a circle the touches the given circle externally is a _____

A. curve

B. straight line

C. circle

D. helix

Answer: C

▶ **Watch Video Solution**

12. The locus of a rectangle, when the rectangle is rotated about one of its sides is a _____

A. pline

B. sphere

C. cone

D. cylinder

Answer: D

13. If the ortho-centre of a triangle ABC is B then which of the following is true?

A. $AC^2 = AB^2 + BC^2$

B. $AC^2 > AB^2 + BC^2$

C. $AC^2 < AB^2 + BC^2$

D. None of these

Answer: A

14. In $\triangle ABC$, $\angle A = \angle B + \angle C$. The point which is equidistant from A, B and C is _____

A. mid point of AB

B. mid point of AC

C. mid - point of BC

D. None of these

Answer: C

> ▶ Watch Video Solution

---

15. The loucs of a point which is equidistant from (0,2) and (0, 8) is _____

A. $y = 4$

B. $y = 5$

C. $x = 4$

D. $x = 5$

Answer: B

> ▶ Watch Video Solution

1. The area of $\triangle PQR$ is 4 sq. units Q and R are (1, 1) and (1, 0) respectively.

Which of the following lines is a part of the locus of P?

    A. $x - 6 = 0$

    B. $x - 7 = 0$

    C. $x + 8 = 0$

    D. $x + 7 = 0$

Answer: D

▶ **Watch Video Solution**

2. What is the locus of the points P(x, y) (where xy $>$ 0), which is at a distance of 2 units from the origin?

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

B. $x^2 + y^2 = 4, x > 0, g > 0$

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

D. None of these

Answer: D

▶ **Watch Video Solution**

---

3. The locus of a point which is twice as far from each vertex of a triangle

as it is from the mid-point of the opposite side is a/an/the _____

A. median

B. centroid

C. incentre

D. angle bisector

Answer: B

▶ **View Text Solution**

4. The locus of a point which is collinear with the two given points is

_____

A. a circle

B. a triangle

C. a straight line

D. a parabola

Answer: C

> ▶ **Watch Video Solution**

---

5. The locus of a points, which is at a distance of 8 units from (0, - 7), is

_____

A. $x^2 + y^2 + 6x + 14y - 15 = 0$

B. $x^2 + y^2 = 14g - 15 = 0$

C. $y^2 + 14g - 8 = 0$

D. $x^2 + y^2 + 14x + 14y - 15 = 0$

Answer: B

▶ Watch Video Solution

6. The area of $\triangle ABC$ is 2 sq. units. If A = (, 4) and B (4,4) then find the locus of C (x,y)

A. $y - 6 = 0$

B. $y - 2 = 0$

C. Both (A) and (B)

D. None of these

Answer: C

▶ Watch Video Solution

7. Find the locus of a point which is a constant distance of 4 units away from the point (2,4)

A. $x^2 + y^2 - 4x8y + 4 = 0$

B. $x^2 + 4x + 16 = 0$

C. $y^2 - 8y + 12 = 0$

D. None of these

Answer: A

▶ **Watch Video Solution**

---

8. P is the point of intersection of the diagonals of a square READ. P is equidistant from _____

A. the vertices R, E,A and D

B. $\overline{RE}$ and $\overline{EA}$

C. $\overline{EA}$ and $\overline{AD}$

D. All of these

Answer: D

▶ **Watch Video Solution**

---

9. A Coin of radius 1 cm is moving along the circumference and interior of a square of side 5 cm. Find the locus of centre of the coin.

    A. A square of side 6 cm

    B. A square of side 4 cm

    C. A square of side 3 cm

    D. A square of side 2 cm

Answer: C

▶ **Watch Video Solution**

10. ABC is a triangle in which AB = 40 cm, BC = 41 cm and AC = 9 cm. Then ortho-centre of $\triangle ABC$ lies_____

    A. interior of the triangle

    B. extorior of the triangle

    C. on the triangle

    D. at the mid-point of the triangle

Answer: C

11. O is an interior point of a rhombus, ABCD, and O is equidistant from BC and CD. The O lies on _____

    A. $\overline{AC}$

    B. $\overline{BD}$

    C. Either (a) and (b)

D. Neither (a) nor (b)

Answer: A

▶ **Watch Video Solution**

12. In a triangle ABC, D is a point on BC, such that any point on AD is equidistant from points B and C. Which of the following is necessarily true?

  A. AB = BC

  B. BC = AC

  C. AC = AB

  D. AB = BC = AC

Answer: C

▶ **Watch Video Solution**

13. The locus of a point, equidistant from the coordinate axes is _____

A. $x = |y|$

B. $y = |x|$

C. Both (A) and (B)

D. None of these

Answer: C

> ▶ Watch Video Solution

14. P is an interior point of an equilateral triangle ABC. If P equidistant from AB and BC, BC and AC, then $\angle BPC$ = ____

A. $12°$

B. $90°$

C. $60°$

D. $150°$

Answer: A

---

15. The locus of a point, which is equidistant from (2,6) and (2, 8) is _____

    A. $y = 7$

    B. $x = 7$

    C. $x = 2$

    D. $y = 2$

Answer: A