



MATHS

BOOKS - NCERT MATHS (HINGLISH)

STRAIGHT LINES

Short Answer Type Questions

1. Find the equation of the straight line which passes through the point $(1 - 2)$ and cuts off equal intercepts from axes.



Watch Video Solution

2. Find the equation of the line passing through the point $(5, 2)$ and perpendicular to the line joining the points $(2,3)$ and $(3,-1)$.



[Watch Video Solution](#)

3. Find the angle between the lines $y = (2 - \sqrt{3})(x + 5)$ and $y = (2 + \sqrt{3})(x - 7)$.



[Watch Video Solution](#)

4. Find the equations of the line which passes through the point $(3, 4)$ and the sum of its intercepts on the axes is 14.

 [Watch Video Solution](#)

5. The points on $x + y = 4$ that lie at a unit distance from the line $4x + 3y - 10 = 0$ are

 [Watch Video Solution](#)

6. Show that the tangent of an angle between the lines $\frac{x}{a} + \frac{y}{b} = 1$ and $\frac{x}{a} - \frac{y}{b} = 1$ is $\frac{2ab}{a^2 - b^2}$.

 [Watch Video Solution](#)

7. Find the equation of a line passing through $(1, 2)$ and making angle of 30° with $y - axis$.

 [Watch Video Solution](#)

8. Find the equation of the line passing through the intersection of the lines $2x + y = 5$ and $x + 3y + 8 = 0$ and parallel to the line $3x + 4y = 7$.

 [Watch Video Solution](#)

9. For what values of a and b the intercepts cut off on the coordinate axes by the line $ax + by + 8 = 0$ are equal in length but opposite in signs to those cut off by the line $2x - 3y + 6 = 0$ on the axes.



[Watch Video Solution](#)

10. If the intercept of a line between the coordinate axes is divided by the point $(-5, 4)$ in the ratio $1:2$, then find the equation of the line.



[Watch Video Solution](#)

11. a Find equation of a straight line on which length of perpendicular from the origin is four units and the line makes an angle of 120^0 with the positive direction of x-axis.



Watch Video Solution

12. Find the equations the sides of an isosceles right angled triangle the equation of whose hypotenuse is $3x + 4y = 4$ and the opposite vertex is the point (2, 2).



Watch Video Solution

Long Answer Type

1. The equation of the base of an equilateral triangle is $x + y = 2$ and its vertex is $(2, -1)$. Find the length and equations of its sides.



[Watch Video Solution](#)

2. A variable line passes through a fixed point P. The algebraic sum of the perpendiculars drawn from the points $(2,0)$, $(0,2)$ and $(1,1)$ on the line is zero. Find the coordinate of the point P.



[Watch Video Solution](#)

3. Angle made with the x-axis by a straight line drawn through $(1, 2)$ so that it intersects $x + y = 4$ at a distance $\frac{\sqrt{6}}{3}$ from $(1, 2)$ is 105° (b) 75° (c) 60° (d) 15°



[Watch Video Solution](#)

4. A straight line moves so that the sum of the reciprocals of its intercepts made on axes is constant. Show that the line passes through a fixed point.



[Watch Video Solution](#)

5. The equation of the straight line which passes through the point $(-4, 3)$ such that the portion of the line between the axes is divided internally by the point in the ratio $5:3$ is (a) $9x - 20y + 96 = 0$ (b) $9x + 20y = 24$ (c) $20x - 9y + 53 = 0$ (d) none of these



[Watch Video Solution](#)

6. Find the equations of the lines through the point of intersection of the lines $x - y + 1 = 0$ and $2x - 3y + 5 = 0$ whose distance from the point $(3, 2)$ is $7/5$.



[Watch Video Solution](#)



Watch Video Solution

7. If the sum of the distances of a moving point in a plane from the axes is 1, then find the locus of the point.



Watch Video Solution

8. P_1, P_2 are points on either of the two lines $y - \sqrt{3}|x| = 2$ at a distance of 5 units from the point of intersection. Find the coordinates of the foot of perpendiculars drawn from P_1, P_2 on the bisector of the angle between the given lines.



Watch Video Solution

9. If p is the length of perpendicular from the origin on the line $\frac{x}{a} + \frac{y}{b} = 1$ and a^2, p^2 and b^2 are in AP, then show that $a^4 + b^4 = 0$.



Watch Video Solution

Objective Type Questions

1. A line cutting off intercept -3 from the Y - axis and the tangent at angle to the X - axis is $\frac{3}{5}$, its equation is

A. $5y - 3x + 15 = 0$

B. $3y - 5x + 15 = 0$

C. $5y - 3x - 15 = 0$

D. None of the above

Answer: A



Watch Video Solution

2. Slope of a line which cuts off intercepts of equal lengths on the axes is

A. -1

B. 0

C. 2

D. $\sqrt{3}$

Answer: A



Watch Video Solution

3. The equation of the straight line passing through the point $(3, 2)$ and perpendicular to the line $y = x$ is

A. $x - y = 5$

B. $x + y = 5$

C. $x + y = 1$

D. $x - y = 1$

Answer: B



Watch Video Solution

4. The equation of the line passing through the point $(1, 2)$ and perpendicular to the line $x + y + 1 = 0$ is

A. $y - x + 1 = 0$

B. $y - x - 1 = 0$

C. $y - x + 2 = 0$

D. $y - x - 2 = 0$

Answer: B



Watch Video Solution

5. Find the tangent of the angle between the lines whose intercepts on the axes are respectively $a, -b$ and $b, -a$

A. $\frac{a^2 - b^2}{ab}$

B. $\frac{b^2 - a^2}{2}$

C. $\frac{b^2 - a^2}{2ab}$

D. None of these

Answer: C



Watch Video Solution

6. If the line $\frac{x}{a} + \frac{y}{b} = 1$ passes through the points a $(2, -3)$ and $(4, -5)$, then $(a, b) =$

A. $(1, 1)$

B. $(-1, 1)$

C. $(1, -1)$

D. $(-1, -1)$

Answer: D



Watch Video Solution

7. The distance of the point of intersection of the lines $2x - 3y + 5 = 0$ and $3x + 4y = 0$ from the line

$5x - 2y = 0$ is

A. $\frac{130}{17\sqrt{129}}$

B. $\frac{13}{7\sqrt{29}}$

C. $\frac{130}{7}$

D. None of these

Answer: A



Watch Video Solution

8. Show that the equations of the straight lines passing through the point $(3, -2)$ and inclined at

60°

to

the

line

$$\sqrt{3}x + y = 1 \text{ and } y + 2 = 0 \text{ and } y - \sqrt{3}x + 2 + 3\sqrt{3} = 0.$$

A. $y + 2 = 0, \sqrt{3}x - y - 2 - 3\sqrt{3} = 0$

B. $x - 2 = 0, \sqrt{3}x - y + 2 + 3\sqrt{3} = 0$

C. $\sqrt{3}x - y - 2 - 3\sqrt{3} = 0$

D. none of above

Answer: A



Watch Video Solution

9. Find the equations of lines passing through the point $(1, 0)$ and a distance $\frac{\sqrt{3}}{2}$ from the origin.

A. $\sqrt{3}x + y - \sqrt{3} = 0, \sqrt{3}x - y - \sqrt{3} = 0$

B. $\sqrt{3}x + y + \sqrt{3} = 0, \sqrt{3}x - y + \sqrt{3} = 0$

C. $x + \sqrt{3}y - \sqrt{3} = 0, x - \sqrt{3}y - \sqrt{3} = 0$

D. None of the above

Answer: A



Watch Video Solution

10. The distance between the lines $y = mx + c_1$ and

$y = mx + c_2$ is

A. $\frac{c_1 - c_2}{\sqrt{m^2 + 1}}$

B. $\frac{|(c_1 - c_2)|}{\sqrt{1 + m^2}}$

C. $\frac{c_2 - c_1}{\sqrt{1 + m^2}}$

D. 0

Answer: B



Watch Video Solution

11. Find coordinates of the foot of perpendicular, image and equation of perpendicular drawn from the point $(2, 3)$ to the line $y = 3x - 4$.

A. $\left(\frac{37}{10}, \frac{-1}{10}\right)$

B. $\left(-\frac{1}{10}, \frac{37}{10}\right)$

C. $\left(\frac{10}{37}, -10\right)$

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

Answer: B



Watch Video Solution

12. If the coordinates of the middle point of the portion of a line intercepted between the coordinate axes is $(3, 2)$, then the equation of the line will be

A. $2x + 3y = 12$

B. $3x + 2y = 12$

C. $4x - 3y = 6$

D. $5x - 2y = 10$

Answer: A



Watch Video Solution

13. Equation of the line passing through $(1, 2)$ and parallel to the line $y = 3x - 1$ is

A. $y + 2 = x + 1$

B. $y + 2 = 3(x + 1)$

C. $y - 2 = 3(x - 1)$

D. $y - 2 = x - 1$

Answer: C



Watch Video Solution

14. Find the equations of the diagonals of the square formed by the lines $x = 0$, $y = 0$, $x = 1$ and $y = 1$.

A. $y = x$, $y + x = 1$

B. $y = x$, $x + y = 2$

C. $2y = x$, $y + x = \frac{1}{3}$

D. $y = 2x$, $y + 2x = 1$

Answer: A



Watch Video Solution

15. For specifying a straight line, how many geometrical parameters should be known ?

A. 1

B. 2

C. 4

D. 3

Answer: B



Watch Video Solution

16. The point $(4, 1)$ undergoes the following two successive transformations

(i) Reflection about the line $y = x$

(ii) Translation through a distance 2 units along the positive X-axis.

Then the final coordinate of the point are

A. $(4, 3)$

B. $(3, 4)$

C. $(1, 4)$

D. $\left(\frac{7}{2}, \frac{7}{2}\right)$

Answer: B



Watch Video Solution

17. A point equidistant from the line $4x + 3y + 10 = 0$, $5x - 12y + 26 = 0$ and $7x + 24y - 50 = 0$ is

A. $(1, -1)$

B. $(1, 1)$

C. $(0, 0)$

D. $(0, 1)$

Answer: C



Watch Video Solution

18. A line passes through the point $(2, 2)$ and is perpendicular to the line $3x + y = 3$, then its y -intercept is

A. $\frac{1}{3}$

B. $\frac{2}{3}$

C. 1

D. $\frac{4}{3}$

Answer: D



Watch Video Solution

19. Find the ratio in which the line $3x + 4y + 2 = 0$ divides the distance between the lines $3x + 4y + 5 = 0$ and $3x - 4y - 5 = 0$.

A. 1 : 2

B. 3 : 7

C. 2 : 3

D. 2 : 5

Answer: B



Watch Video Solution

20. Find the coordinates of one vertex of an equilateral triangle with centroid at the origin and the opposite side $x + y - 2 = 0$.

A. $(-1, -1)$

B. $(2, 2)$

C. $(-2, -2)$

D. $(2, -2)$

Answer: C



Watch Video Solution

1. If a, b and c are in AP , then the straight line $ax + by + c = 0$ will always pass through a fixed point whose coordinates are _____



[Watch Video Solution](#)

2. Find the equation of the straight line which passes through the point $(1 - 2)$ and cuts off equal intercepts from axes.



[Watch Video Solution](#)

3. Find the equation of the lines through the point (3, 2) which make an angle of 45° with the line $x - 2y = 3$.

 [Watch Video Solution](#)

4. The points (3, 4) and (2, -6) are situated on the Of the line $3x - 4y - 8 \equiv 0$

 [Watch Video Solution](#)

5. A point moves so that square of its distance from the point (3, -2) is numerically equal to its distance

from the line $5x - 12y = 3$. The equation of its locus is



[Watch Video Solution](#)

6. Find the locus of the mid-point of the portion of the line $x \cos \alpha + y \sin \alpha = p$ which is intercepted between the axes.



[Watch Video Solution](#)

True False

1. If the vertices of a triangle have rational coordinates, then prove that the triangle cannot be equilateral.

 [Watch Video Solution](#)

2. The points A(-2,1), B(0,5) and C(-1,2) are collinear.

 [Watch Video Solution](#)

3. Equation of the line passing through the point $(a \cos^3 \theta, a \sin^3 \theta)$ and perpendicular to the line $x \sec \theta + y \operatorname{cosec} \theta = a$ is $x \cos \theta - y \sin \theta = a \cos 2\theta$.

 [Watch Video Solution](#)

4. The line $5x + 4y = 0$ passes through the point of intersection of straight lines (1) $x+2y-10 = 0$, $2x + y = -5$

 [Watch Video Solution](#)

5. The vertex of an equilateral triangle is $(2, 3)$ and the equation of the opposite side is $x + y = 2$. Then, the other two sides are $y - 3 = (2 \pm \sqrt{3})(x - 2)$.

 [Watch Video Solution](#)

6. The equation of the line joining the point $(3, 5)$ to the point of intersection of the lines $4x + y - 1 = 0$ and $7x - 3y - 35 = 0$ is equidistant from the points $(0, 0)$ and $(8, 34)$.



[Watch Video Solution](#)

7. If the line $\left(\frac{x}{a}\right) + \left(\frac{y}{b}\right) = 1$ moves in such a way that $\left(\frac{1}{a^2}\right) + \left(\frac{1}{b^2}\right) = \left(\frac{1}{c^2}\right)$, where c is a constant, prove that the foot of the perpendicular from the origin on the straight line describes the circle $x^2 + y^2 = c^2$.



[Watch Video Solution](#)

8. If the lines

$$ax + 2y + 1 = 0, bx + 3y + 1 = 0 \text{ and } cx + 4y + 1 = 0$$

are concurrent, then a, b, c are in a. A.P. b. G.P. c. H.P. d.

none of these



[Watch Video Solution](#)

9. Line joining the points $(3,-4)$ and $(-2,6)$ is perpendicular to the line joining the points $(-3,6)$ and $(9,-18)$.



[Watch Video Solution](#)

Matching The Column

1. Match the following

Column I	Column II
(i) The coordinates of the points P and Q on the line $x + 5y = 13$ which are at a distance of 2 units from the line $12x - 5y + 26 = 0$ are	(a) $(3, 1), (-7, 11)$
(ii) The coordinates of the point on the line $x + y = 4$, which are at a unit distance from the line $4x + 3y - 10 = 0$ are	(b) $\left(-\frac{1}{3}, \frac{11}{3}\right), \left(\frac{4}{3}, \frac{7}{3}\right)$
(iii) The coordinates of the point on the line joining $A(-2, 5)$ and $B(3, 1)$ such that $AP = PQ = QB$ are	(c) $\left(1, \frac{12}{5}\right), \left(-3, \frac{16}{5}\right)$



Watch Video Solution

2. The value of the λ if the lines

$$(2 + 3y + 4) + \lambda(6x - y + 12) = 0 \text{ are}$$

Column I	Column II
(i) parallel to Y axis is	(a) $\lambda = -\frac{3}{4}$
(ii) perpendicular to $7x + y - 4 = 0$ is	(b) $\lambda = -\frac{1}{3}$
(iii) passes through (1, 2) is	(c) $\lambda = -\frac{17}{41}$
(iv) parallel to X-axis is	(d) $\lambda = 3$

 **Watch Video Solution**

3. The equation of the line through the intersection of the lines $2x - 3y = 0$ and $4x - 5y = 2$ and

Column I	Column II
(i) through the point (2, 1) is	(a) $2x - y = 4$
(ii) perpendicular to the line $x + 2y + 1 = 0$	(b) $x + y - 5 = 0$
(iii) parallel to the line $3x - 4y + 5 = 0$ is	(c) $x - y - 1 = 0$
(iv) equally inclined to the axes is	(d) $3x - 4y - 1 = 0$

 **Watch Video Solution**