MATHS

BOOKS - MARVEL MATHS (HINGLISH)

STRAIGHT LINE

Illustrative Examples

1. Using slopes show that the points (1,3), (3,-1) and (5,-5) are collinear.

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2. If the triangle with vertices A (12,8) , B (-2,k) and C (6,0) is right - angled at C, find k.

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3. The point P is (-2,5). Find the point A on the X axis and the point B on the Y-axis such that the slope of the line AP is 3 and slop of line BP is 7.

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4. If the point (1,1) lies on the line passing through the points (a,0) and (0,b) find the value of the expression: $\frac{1}{a}+\frac{1}{b}$.

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5. Find the equation of the line having inclination 135° and bisecting the join of the points (-2,5) and (3,4).

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6. Find the equation of the line which passes through the point (5-1), and divides the join of the points (9,2) and (3,4) internally in the ratio $1:2$.

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7. A (1,-2), B(-2,3) and C (2,-5) are the vertives of Δ ABC. Find the equation of the

(i) side AC

(ii) altiude from A

(iii) median from B

Perpendicular bisector of side AB.

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8. If (2,-3) and (-6,7) are opposite vertices of a rhombus , find the equations of its diagonals.

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9. Prow that the line through the point $(x_1 > y_1)$ and parallel to the line $Ax + By + C = 0$ is $A(x - x_1) + B(y - y_1) = 0$.

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10. Show that the equation of a line passing through a given point (x_1, y_1) and perpendicular to the line ax+by +c =0 is

b(x-x_1) $- a(y - y_1)$ =0.

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11. If a line passing through a point (k,2) and having x- intercept 4 has slope 1/3 find K.

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12. If a line has x-intercept =a and y- intercept =b show that its slope is m= -b/a. Hence discuss the equation of a line which makes equal makes equal intercepts on the co-ordinate axes.

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13. Find the equation of the line passing through the point (1,3), if its y-intercept is 3 times its x-intercept.

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14. Find the equation of the straight line which passes through the point (-3, 8) and cuts off positive intercepts on the coordinate axes whose sum is 7.

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15. If the mid- point of the portion of a line intercepted between ithe co-ordinate axes is (4,5) find the equation of the line.

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16. A line intersects the co- ordinate axes in the points A and B such that area of Δ OAB is 48 sq. units. If the line passes through the point (3,6) find its equation.

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17. A square is constructed on the portion of $x + y = 5$, which is intercepted between the axes on the side of the line away from origin. The equations to the diagonals of the square are

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18. If (-4,5) is a vertex of a square and one of its diagonal is 7x-y+8-0.Find the equation of other diagonal

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19. . The points (1,3), (5, 1) are the opposite vertices of a rectangle. The other two vertices lie on the line $y = 2x + c$. Find c and remaining two vertices.

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20. The sides of a parallelogram are parallel to the lines $5x-y=0$ and $7x+y=0$. If $(1,3)$ and $(-2,4)$ are a pair of its opposite vertices find the equations of all of its sides.

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21. Astraight 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.

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22. Find the measure of the acute angle between the two lines.

(i) $x+3y+1=0$ and $2x+y+7=0$

(ii) $3x+2y=9$ and $2x-y+1=0$.

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23. Two sides of a square are along the lines $5x-12y+39=0$ and $5x-12y+78=0$.

Find the area of the square.

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24. Find the radius of a circle which touches two lines

3x-4y-6=0 and 6x-8y+1=0.

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25. Find the equation of the line at a distance of 3 units from the origin and having inclination 120°.

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26. Find the coordinates of a point on $x + y + 3 = 0$, whose distance from

$x + 2y + 2 = 0$ is $\sqrt{5}$.

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27. Find the co-ordinates of the point (s) on the X-axis which is (are) at a unit distance from the line 5x+12y=12.

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28. Find the equation of a line parallel to the line x+2y-1=0, which is at a distance of $2\sqrt{5}$ units from the point (1,3) .

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29. Find the equation of a line perpendicular to the line 3x-y-5=0, which is at a distance of $2\sqrt{10}$ units froms the points (1,-1).

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30. If P_1 and p_2 are the lenghts of the perpendiculars drawn from the origin to the two lines

x sec α +y . Cosec α =2a

and x. cos α +y. sin α=a. cos 2 α,

show that $P_1^2 + P_2^2$ is constant for all values of α .

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(3-2k) x-(2+k)y=5-k,

where k is real represents a family of lines all passing through a fixed point. Find the co-ordinates of this fixed point.

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$$\frac{1}{4}+\frac{1}{b}.$$

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(3-2k) x-(2+k)y=5-k,

where k is real represents a family of lines all passing through a fixed point. Find the co-ordinates of this fixed point.

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65. If $u \equiv x-y-6$ and $v \equiv 2x-y-12$ find the points (s) of intersection of the two loci

$21u+107v=0$ and $5u-133v=0$.

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Mutiple Choice Questions

1. If the line passing through (2,3) and (5,k) has slope (5/3), then : k=

A. -1

B. 0

C. 8

D. 2

Answer: C

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2. If the points (-3,4), (-14,12) and (8,k) are collinear then :k

A. -1

B. -2

C. -3

D. -4

Answer: D

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3. If the point (3,k) lies on the line passing through the points (-1,3) and (1,5) then :k=

A. -1

B. 3

C. 7

D. 2

Answer: C

4. If the triangle whose vertices are A(4,3), B(6,-2) and C(k,-3) is right -angled at A, then : K=

A. 3

B. 8

C. -11

D. -5

Answer: C

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5. If A is (5,-3) and B is a point on the X-axis such that the slope of line AB is (-2), then : B=

A. (7,2)

B. (7/2,0)

C. (0,7/2)

D. (2/7,0)

Answer: B

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6. If A is (-4,9) and B is a point on the Y-axis such that the slope of the line AB is (-1), then : B $\equiv$

A. (0,1)

B. (0,3)

C. (5,0)

D. (0,5)

Answer: D

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7. If A is (1,-2), B (3,k), C(-3,1) and D (k,4) where lines AB and CD are parallel then : K=

A. $-2/7$

B. $2/7$

C. $-7/2$

D. $7/2$

Answer: A

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8. If A is (1,-2), B (3,k), C(-3,1) and D(k,4) where lines AB $\perp$ CD then :k=

A. $-\frac{5}{12}$

B. $5/12$

C. $-12/5$

D. $12/5$

Answer: C

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9. If the point (1,1) lies on the line passing through the points (a,0) and (0,b) then : $\frac{1}{a}+\frac{1}{b}=$

A. -1

B. 0

C. 1

D. $\frac{1}{ab}$

Answer: C

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10. The slope of the line which bisects the angles in the first and third quadrants is

A. -1

B. 0

C. 1

D. none of these

Answer: C

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11. The slope of the line which bisects the angles in the second and fourth quadrants is

A. -1

B. 0

C. 1

D. none of these

Answer: A

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12. If A (1,-2), B (-2,3) and C(2,-5) are the vertices of Δ ABC, then the equation of the median BE is

A. $7x+13y+47=0$

B. $13x+7y+5=0$

C. $7x-13y+5=0$

D. none of these

Answer: B

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13. The equation of the line which passes through (4,7) and divides the join of (1,7) and (6,-3) internally in the ratio 2:3, is

A. $y=4x-9$

B. $x=4y-9$

C. $4x+y=9$

D. none of these

Answer: A

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14. The equation of the line having inclination 120° and dividing the join of (-1,4) and (2,6) externally in the ratio 2:1, is

A. $\sqrt{3}$ .x+y=13

B. (x-5) $\sqrt{3}$+y=8

C. x+$y\sqrt{3}$=8

D. none of these

Answer: B

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15. The area of the quadrilateral whose sides are along the lines $x=0$, $x=4$, $y=-3$ and $y=5$ is

A. 12

B. 15

C. 20

D. 32

Answer: D

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16. The equation of the line through $(1, 2)$, which makes equal intercepts on the axes is

A. $x + y = 1$

B. $x + y = 2$

C. $x + y = 4$

D. none of these

Answer: D

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17. The equation of the line through $(4, 1)$, whose x-intercept is double its $y-$ intercepts on the axes is

A. $x + 2y = 6$

B. $2x + y = 6$

C. $x + 2y + 6 = 0$

D. none of these

Answer: A

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18. The equation of the line through the origin which bisects the portion of the line $3xy=12$ intercepted between the axex is

A. $3x+y=0$

B. $y=3x$

C. $x=3y$

D. none of these

Answer: A

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19. If (2,3) is the midpoint of the portion of a line intercepted between the co-ordinate axes , then the equation of the line is

A. $2x+3y=12$

B. $2x+3y+12=0$

C. $3x+2y=12$

D. none of these

Answer: C

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20. Find the equation of the straight line which passes through the point (-3, 8) and cuts off positive intercepts on the coordinate axes whose sum is 7.

A. 8x-3y=24

B. 4x+3y=12

C. $3x + 8y = 24$

D. none of these

Answer: B

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21. The equation of the line through (6,1) having x- and y-intercepts eaual in magnitude but opposite in sign is

A. x-y=5

B. y=x+5

C. x+y=5

D. none of these

Answer: A

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22. The equation of the line having $y-$ intercept $=-7$, and parallel to the join of $(2,3)$ and $(-3,7)$ is

A. $5x+4y+28=0$

B. $4x+5y+35=0$

C. $4x+5y+28=0$

D. none of these

Answer: B

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23. The equation of the line having x- intercept =5/3, and perendicular to the join of (5,-2) and (-1,3) is

A. 6x-5y=10

B. 5x-6y=10

C. 6x-5y+10=0

D. none of these

Answer: A

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24. A line meets X-axis in A and Y-axis in B. If R (4,6) is point on the line such that AR:RB=3:2, then the equation of the line is

A. $y=x+10$

B. $x+y+10=0$

C. $x+y=10$

D. none of these

Answer: C

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25. The length of the perpendicular from the origin on a line L is 3. If the perperdicular make an angle of 240° with positive X-axis then the equation of line L is

A. $\sqrt{3}$ .x+y=6

B. $x + y\sqrt{3}$+6=0

C. $\sqrt{3}$,x+y+6=0

D. none of these

Answer: B

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26. If the length of the perpendicular to a line L from the origin is 8 and the perpendicular makes an angle of 60° with the X-axis then the equation of line L is

A. x+$y\sqrt{3}$=16

B. $x\sqrt{3}$+y=16

C. x-$y\sqrt{3}$+16=0

D. none of these

Answer: A

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27. If the length of the perpendicular to a line L from the origin si $5\sqrt{2}$ and the perperdicular to a makes an angle of 135° with the X-axis then the equation of line L is

A. x+y+10=0

B. x-y-10=0

C. y=x+10

D. none of these

Answer: C

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28. If A is $(\sqrt{3}, 1)$ and B is $(\sqrt{3}, -1)$, then :m $an \geq l$AOB=

A. 30°

B. 45°

C. 60°

D. 90°

Answer: C

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29. If the line $kx+4y=6$ passes through the point of intersection of the two lines $2x+3y=4$ and $3x+4y=5$, then : $k=$

A. 1

B. 2

C. 3

D. 4

Answer: B

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30. If the line $ky=x+1$ passes through the point on intersection of the two lines $2x-3y+5=0$ and $3x+2y+1=0$, then :$k=$

A. -1

B. 0

C. 1

D. none of these

Answer: B

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31. The foot of the perpendicular from (1,2) on the line x-3y+7=0 is

A. (5/4, 5/13)

B. (4/5, 13/5)

C. (4/5, 9/5)

D. none of these

Answer: B

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32. The foot of the perpendicular from (2,-5) on the line 3x-4y+10=0 is

A. (-58/25, 19/25)

B. (58/25,-19/25)

C. (25/58,-25/19)

D. none of these

Answer: A

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33. Distance of the point (-2,-4) from the line $\frac{x}{3} - \frac{y}{4} = 1$ is

A. 43959

B. 44048

C. 0

D. none of these

Answer: B

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34. Find the equation of the line at a distance of 3 units from the origin and having inclination 120°.

A. $\sqrt{3}.\ x \pm y + 6 = 0$

B. $\sqrt{3}.\ x + y \pm 6 = 0$

C. x+y=6

D. none of these

Answer: B

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35. A point of the X-axis which is at a unit distance from the line $5x+12y=12$ is

A. $(1/5,0)$

B. $(5,0)$

C. $(17,0)$

D. none of these

Answer: B

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36. If the perpendicular distance of the line (x/a)+(y/b)=1 from the origin is $p/\sqrt{2}$ show that a^2, p^2, b^2 are in Harmonic Progression.

A. A.P.

B. G.P.

C. H.P.

D. none of these

Answer: C

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37. If p_1 and p_2 are the lengths of the perpendicular form the orgin to the line $x\sec\theta + y\cos ec\theta = a$ and $x\cos\theta - y\sin\theta = a\cos 2\theta$ respectively then prove that $4p_1^2 + p_2^2 = a^2$

A. $\sqrt{m}$

B. m

C. m^2

D. m^4

Answer: C

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38. In relation to the line : $\frac{x}{3} - \frac{y}{4} = 1$, the point (-2,-4) lies on

A. the line

B. the origin side of the line

C. the non- origin side of the line

D. none of these

Answer: B

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39. In relation to the line : $7(x-2) = 5(y+3)$, the point $(3,-2)$ lies on

A. the line

B. origin side of the line

C. non-origin side of the line

D. none of these

Answer: C

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40. If the line passing through (2,3) and (5,k) has slope (5/3), then : k=

A. -1

B. 0

C. 8

D. 2

Answer: C

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41. If the points (-3,4), (-14,12) and (8,k) are collinear then :k

A. -1

B. -2

C. -3

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42. If the point (3,k) lies on the line passing through the points (-1,3) and (1,5) then :k=

A. -1

B. 3

C. 7

D. 2

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43. If the triangle whose vertices are A(4,3), B(6,-2) and C(k,-3) is right -angled at A, then : K=

A. 3

B. 8

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44. If A is (5,-3) and B is a point on the X-axis such that the slope of line AB is (-2), then : B=

A. (7,2)

B. (7/2,0)

C. (0,7/2)

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Answer: B

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45. If A is (-4,9) and B is a point on the Y-axis such that the slope of the line AB is (-1), then : B ≡

A. (0,1)

B. (0,3)

C. (5,0)

D. (0,5)

Answer: D

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46. If A is (1,-2), B (3,k), C(-3,1) and D (k,4) where lines AB and CD are parallel then : K=

A. $-2/7$

B. $2/7$

C. $-7/2$

D. $7/2$

Answer: A

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47. If A is (1,-2), B (3,k), C(-3,1) and D(k,4) where lines AB $\perp$ CD then :k=

A. $-\frac{5}{12}$

B. $5/12$

C. $-12/5$

D. $12/5$

Answer: C

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48. If the point (1,1) lies on the line passing through the points (a,0) and (0,b) then : $\frac{1}{a}+\frac{1}{b}=$

A. -1

B. 0

C. 1

D. $\frac{1}{ab}$

Answer: C

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49. The slope of the line which bisects the angles in the first and third quadrants is

A. -1

B. 0

C. 1

D. none of these

Answer: C

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A. $y=4x-9$

B. $x=4y-9$

C. $4x+y=9$

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A. 12

B. 15

C. 20

D. 32

Answer: D

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55. The equation of the line through (1,2), which makes equal intercepts on the axes is

A. $x+y=1$

B. $x+y=2$

C. $x+y=4$

D. none of these

Answer: D

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56. The equation of the line through (4,1), whose x-intercept is double its y-intercepts on the axes is

A. $x+2y=6$

B. $2x+y=6$

C. $x+2y+6=0$

D. none of these

Answer: A

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57. The equation of the line through the origin which bisects the portion of the line $3x-y=12$ intercepted between the axes is

A. $3x+y=0$

B. $y=3x$

C. $x=3y$

D. none of these

Answer: A

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58. If (2,3) is the midpoint of the portion of a line intercepted between the co-ordinate axes , then the equation of the line is

A. $2x+3y=12$

B. $2x+3y+12=0$

C. $3x+2y=12$

D. none of these

Answer: C

Watch Video Solution

59. Find the equation of the straight line which passes through the point (-3, 8) and cuts off positive intercepts on the coordinate axes whose sum is 7.

A. 8x-3y=24

B. 4x+3y=12

C. $3x + 8y = 24$

D. none of these

Answer: B

Watch Video Solution

60. The equation of the line through (6,1) having x- and y-intercepts eaual in magnitude but opposite in sign is

A. x-y=5

B. y=x+5

C. x+y=5

D. none of these

Answer: A

Watch Video Solution

61. The equation of the line having y-intercept =-7, and parallel to the join of (2,3) and (-3,7) is

A. $5x+4y+28=0$

B. $4x+5y+35=0$

C. $4x+5y+28=0$

D. none of these

Answer: B

Watch Video Solution

62. The equation of the line having x- intercept =5/3, and perendicular to the join of (5,-2) and (-1,3) is

A. 6x-5y=10

B. 5x-6y=10

C. 6x-5y+10=0

D. none of these

Answer: A

Watch Video Solution

63. A line meets X-axis in A and Y-axis in B. If R (4,6) is point on the line such that AR:RB=3:2, then the equation of the line is

A. $y=x+10$

B. $x+y+10=0$

C. $x+y=10$

D. none of these

Answer: C

Watch Video Solution

64. The length of the perpendicular from the origin on a line L is 3. If the perperdicular make an angle of 240° with positive X-axis then the equation of line L is

A. $\sqrt{3}$ .x+y=6

B. $x + y\sqrt{3}$+6=0

C. $\sqrt{3}$,x+y+6=0

D. none of these

Answer: B

Watch Video Solution

65. If the length of the perpendicular to a line L from the origin is 8 and the perpendicular makes an angle of 60° with the X-axis then the equation of line L is

A. x+$y\sqrt{3}$=16

B. $x\sqrt{3}$+y=16

C. x-$y\sqrt{3}$+16=0

D. none of these

Answer: A

Watch Video Solution

66. If the length of the perpendicular to a line L from the origin si $5\sqrt{2}$ and the perperdicular to a makes an angle of 135° with the X-axis then the equation of line L is

A. x+y+10=0

B. x-y-10=0

C. y=x+10

D. none of these

Answer: C

Watch Video Solution

67. If A is $(\sqrt{3}, 1)$ and B is $(\sqrt{3}, -1)$, then :m $an \geq l$AOB=

A. 30°

B. 45°

C. 60°

D. 90°

Answer: C

Watch Video Solution

68. If the line $kx+4y=6$ passes through the point of intersection of the two lines $2x+3y=4$ and $3x+4y=5$, then : $k=$

A. 1

B. 2

C. 3

D. 4

Answer: B

Watch Video Solution

69. If the line $ky=x+1$ passes through the point on intersection of the two lines $2x-3y+5=0$ and $3x+2y+1=0$, then :$k=$

A. -1

B. 0

C. 1

D. none of these

Answer: B

Watch Video Solution

70. The foot of the perpendicular from (1,2) on the line x-3y+7=0 is

A. (5/4, 5/13)

B. (4/5, 13/5)

C. (4/5, 9/5)

D. none of these

Answer: B

Watch Video Solution

71. The foot of the perpendicular from (2,-5) on the line 3x-4y+10=0 is

A. (-58/25, 19/25)

B. (58/25,-19/25)

C. (25/58,-25/19)

D. none of these

Answer: A

Watch Video Solution

72. Distance of the point (-2,-4) from the line $\frac{x}{3} - \frac{y}{4} = 1$ is

A. 43959

B. 44048

C. 0

D. none of these

Answer: B

Watch Video Solution

73. Find the equation of the line at a distance of 3 units from the origin and having inclination 120°.

A. $\sqrt{3}.\ x \pm y + 6 = 0$

B. $\sqrt{3}.\ x + y \pm 6 = 0$

C. x+y=6

D. none of these

Answer: B

Watch Video Solution

74. A point of the X-axis which is at a unit distance from the line $5x+12y=12$ is

A. $(1/5,0)$

B. $(5,0)$

C. $(17,0)$

D. none of these

Answer: B

Watch Video Solution

75. If the perpendicular distance of the line (x/a)+(y/b)=1 from the origin is $p/\sqrt{2}$ show that a^2, p^2, b^2 are in Harmonic Progression.

A. A.P.

B. G.P.

C. H.P.

D. none of these

Answer: C

Watch Video Solution

76. If p_1 and p_2 are the lengths of the perpendicular form the orgin to the line $x\sec\theta + y\cos ec\theta = a$ and $x\cos\theta - y\sin\theta = a\cos 2\theta$ respectively then prove that $4p_1^2 + p_2^2 = a^2$

A. $\sqrt{m}$

B. m

C. m^2

D. m^4

Answer: C

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77. In relation to the line : $\frac{x}{3} - \frac{y}{4} = 1$, the point (-2,-4) lies on

A. the line

B. the origin side of the line

C. the non- origin side of the line

D. none of these

Answer: B

Watch Video Solution

78. In relation to the line : $7(x-2) = 5(y+3)$, the point $(3,-2)$ lies on

A. the line

B. origin side of the line

C. non-origin side of the line

D. none of these

Answer: C

 Watch Video Solution

Miscellaneous Mcqs

1. If the point $P(p, q)$ is equidistant from the points $A(a+b, b-a)$ and $B(a-b, a+b)$, then

A. ax=by

B. bx=ay

C. ax=-by

D. bx=-ay

Answer: B

Watch Video Solution

2. Prove that the points (a+b+c),(b,c+a) and (c,a+b) are collinear.

A. vertices of an equilateral triangle

B. vertices of a right angled triangle

C. concyclic

D. collinear

Answer: D

Watch Video Solution

3. Points A (a,3) and C (5,b) are opposite vertices of a rectangle ABCD. If the other two vertices lie on the line y=2x +c which passes through the point (a,b), then : c=

A. -7

B. -4

C. 0

D. 7

Answer: A

Watch Video Solution

4. If a,b,c are non-zero real numbers in H.P then the line $\frac{x}{a}+\frac{y}{b}+\frac{1}{c}=0$ always passes through a fixed point whose coordinates are

A. (1,-2)

B. (1,-1/2)

C. (-1,2)

D. (-1,-2)

Answer: A

Watch Video Solution

5. Let A (2,-3) and B(-2,1) be vertices of a triangle ABC. If the centroid of this triangle moves on line 2x + 3y = 1, then the locus of the vertex C is the line :

A. 3x+2y=5

B. 2x-3y=7

C. 2x+3y=9

D. 3x-2y=3

Answer: C

 Watch Video Solution

6. For any real values of a,b,c such that 3a, +2b+4c=0, line ax+by+c=0 passes through the fixed point whose coordinates are

A. (3,2)

B. (2,4)

C. (3,4)

D. (3/4,1/2)

Answer: D

 Watch Video Solution

7. The equations of sides of a triangle are $x+3y=0$, $4x-3y=5$ and $3x-y=0$. Then the line $6x-7y=0$ passes through the _____ of the triangle.

A. incentre

B. centroid

C. circumcentre

D. orthocentre

Answer: D

Watch Video Solution

8. Ifa,b,c are in A.P., a,x,b,are in G.P and b,y,c are also in G.P then the point (x,y) lies on

A. a line

B. a circle

C. an ellipse

D. a hyperbola

Answer: B

Watch Video Solution

9. If we reduce $3x + 3y + 7 = 0$ to the form $x\cos\alpha + y\sin\alpha = p,$ then find the value of $p.$

A. $\frac{7}{2\sqrt{3}}$

B. $\frac{7}{3}$

C. $\frac{3\sqrt{7}}{2}$

D. $\frac{7}{3\sqrt{2}}$

Answer: D

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10. The length of perpendicular from the point ($a\cos\propto, a\sin\propto$) upon the striaght line y = x $\tan\propto + c$ (where c gt 0) is

A. c

B. c. $\sin^2\alpha$

C. c.cos α

D. c.$\sec^2\alpha$

Answer: C

Watch Video Solution

11. the line $\frac{x}{a} - \frac{y}{b} = 1$ cuts the x-axes at P.the equation of the line passes through point P and perpendicular to the line is:

A. x+y=ab

B. x+y=a+b

C. ax+by=a^2

D. bx+ay=a^2

Answer: C

Watch Video Solution

12. If (-4,5) is a vertex of a square and one of its diagonal is 7x-y+8-0.Find the equation of other diagonal

A. x+3y=21

B. 2x=3y=7

C. x+7y=31

D. 2x+3y=21

Answer: C

Watch Video Solution

13. If a,b,c $>$ 0, then area of the triangle formed by the line ax+by+c=0 and coordinatte axes is

A. $\frac{a^2}{2abc}$

B. $\frac{b^2}{2abc}$

C. $\frac{c^2}{2abc}$

D. 0

Answer: C

Watch Video Solution

14. If the line ax+by+c=0 always passes through the fixed point (1,-2) then : a,b,c are in

A. A.P.

B. G.P.

C. H.P.

D. none of these

Answer: A

 Watch Video Solution

15. A square of area 25 sq.units is formed by taking two sides as $3x + 4y = k_1$ and $3x + 4y = k_2$ then $|k_1 - k_2| =$

A. 5

B. 1

C. 25

D. 20

Answer: C

Watch Video Solution

16. Segment joining (1,2) and (-2,1) is divided by the line 3x+4y=7 in the ration

A. $3:4$

B. $4:3$

C. $9:4$

D. $4:9$

Answer: D

Watch Video Solution

17. The medians AD and BE of the triangle with vertices A(0, b), B(0, 0) and C(a, 0) are mutually perpendicular if

A. b=$a\sqrt{2}$

B. a=$b\sqrt{2}$

C. b=$-a\sqrt{2}$

D. a=$5b\sqrt{2}$

Answer: B

Watch Video Solution

18. A triangle are$(6, 0)$. $(0, 6)$ and $(6, 6)$. If distance between circumcentre and orthocenter and distance between circumcentre and centroid are λ and u unit respectively, then (λ, u) lies on:

A. $2\sqrt{2}$

B. 2

C. $3\sqrt{2}$

D. 1

Answer: C

Watch Video Solution

19. If a vertex of a triangle is $(1, 1)$, and the middle points of two sides passing through it are $-2, 3)$ and $(5, 2),$ then find the centroid and the incenter of the triangle.

A. (5/3,3)

B. (5/3,-3)

C. (-5/3,3)

D. (-5/3,-3)

Answer: A

Watch Video Solution

20. Find the points on the line $x + y = 4$ that lies at a unit distance from the line $4x + 3y = 10$.

A. (5,-1)

B. (-7,11)

C. (3,-1)

D. (7,-11)

Answer: B

Watch Video Solution

21. A rectangle has two opposite vertices at the points (1,2) and (5,5). If the other vertices lie on the line x=3, then their coordinates are

A. (3,-1), (3,-6)

B. (3,1), (3,5)

C. (3,2), (3,6)

D. (3,1) ,(3,6)

Answer: D

Watch Video Solution

22. find the equation of the straight line passing through the origin and the middle point of intercept of the line $ax + by + c = 0$between the axes

A. ax+by=0

B. ax-by=0

C. bx+ay=0

D. bx=ay=0

Answer: B

Watch Video Solution

23. Diagonals of a parallelogram PQRS must be a

A. rectangle

B. square

C. cyclic quadrilateral

D. rhombus

Answer: D

View Text Solution

24. A line passes through (2,2) and is perpendicular to the line $3x + y = 3$, is

A. 3x + y = 8

B. 3x - y = 4

C. x - 3y = -4

D. x + 3y = 8

Answer: C

Watch Video Solution

25. The distance of the mid point of the line joining the points $(a\sin\theta, 0)$ and $(0, a\cos\theta)$ from the origin is

A. $\frac{a}{2}$

B. $\frac{a}{2}(\sin\theta + \cos\theta)$

C. $a(\sin\theta + \cos\theta)$

D. a

Answer: A

Watch Video Solution

26. If a,b,c $>$ 0 and the line ax +cy=2b makes a triangle of area 2 with the axes then :

A. a,b,c are in G.P.

B. a,-b,-c are in G.P.

C. a,2b,c are in G.P.

D. a,-2b,c are in G.P.

Answer: A

 Watch Video Solution

27. If $P_1 \text{and} P_2$ are the lenghts of perpendiculars from origin to the lines x. sec a+y . Csc a=2a and x.cos α+y. sin α =a cos 2 α,

A. $4\sin^2 4\alpha$

B. $4\cos^2 4\alpha$

C. $4\csc^2 4\alpha$

D. $4\sec^2 4\alpha$

Answer: C

View Text Solution

28. If $A(-1, 3)$, $B(1, -1)$ and $C(5, 1)$ are the vertices of a triangle ABC, find the length of the median through A.

A. 5

B. 4

C. 1

D. 3

Answer: A

Watch Video Solution

29. The equation of the locus of the point whose distance from the x-axis is twice that of from the y-axis is :

A. y=x

B. y=2x

C. x=y

D. x=2y

Answer: D

Watch Video Solution

30. The points (3,3), (h,0) and (0,k) are collinear if

A. $\frac{1}{h}+\frac{1}{k}+=\frac{1}{3}$

B. $\frac{1}{h}-\frac{1}{k}=\frac{1}{3}$

C. $\frac{1}{k}-\frac{1}{h}=\frac{1}{3}$

D. $\frac{1}{h} = \frac{1}{k}$

Answer: A

 Watch Video Solution

31. if $(3, -4), (-6, 5)$ are the exterimities of the diagonal of the parallelogram and $(-2, -1)$ is itts third vertex then find fourth vertex,

A. (1,0)

B. (-1,0)

C. (0,1)

D. (0,-1)

Answer: B

Watch Video Solution

32. If $P = (1, 0); Q = (-1.0) \& R = (2, 0)$ are three given points, then the locus of the points S satisfying the relation, $SQ^2 + SR^2 = 2SP^2$ is -

A. a line || to X-axis

B. a line || to Y-axis

C. circle with centre at origin

D. none of these

Answer: B

Watch Video Solution

33. The distance of the mid point of the line joining the points $(a\sin\theta, 0)$ and $(0, a\cos\theta)$ from the origin is

A. a

B. $\frac{a}{2}(\sin\theta + \cos\theta)$

C. a$(\sin\theta + \cos\theta)$

D. $\frac{a}{2}$

Answer: D

 Watch Video Solution

34. If a triangle has its orthocentre at (1,1) and circumcentre at (3/2,3/4) then the coordinate of the centroid of triangle is

A. $\left(\frac{4}{3}, -\frac{5}{6}\right)$

B. $\left(\frac{4}{3}, \frac{5}{6}\right)$

C. $\left(-\frac{4}{3}, \frac{5}{6}\right)$

D. $\left(-\frac{4}{3}, -\frac{5}{6}\right)$

Answer: B

Watch Video Solution

35. Find the orthocentre of the triangle whose vertices are $(0, 0), (3, 0),$ and $(0, 4)$.

A. $\left(\frac{3}{4}, 2\right)$

B. (0,0)

C. $\left(1, \frac{4}{3}\right)$

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

Answer: B

Watch Video Solution

36. If the orthocentre and centroid of a triangle are (-3, 5) and (3, 3) then its circumcentre is

A. (0,4)

B. (6,-2)

C. (6,2)

D. (0,8)

Answer: C

Watch Video Solution

37. The medians AD and BE of the triangle with vertices A(0, b), B(0, 0) and C(a, 0) are mutually perpendicular if

A. $a = \frac{b}{2}$

B. $b=\frac{a}{2}$

C. ab=1

D. $a=\pm\sqrt{2b}$

Answer: D

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38. The point which divides the join of (1,2) and(3,4) externally in the ratio 1:1 a. lies in the III quadrant b. lies in the II quadrant c. lies in the I quadrant d. cannot be found

A. lies in the third quadrant

B. lies in the second quadrant

C. lies in the first quadrant

D. cnnont be found

Answer: D

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39. The points $(-a, -b)$, $(0, 0)$. (a, b) and $\left(a^2, a^3\right)$ are

A. vertices of a rectangle

B. vertices of a parallelogram

C. collinear

D. none of these

Answer: C

Watch Video Solution

40. If A and B are two points on the line joining P (2,5) and Q (4,-7) such that PA =AB=BQ then the mid point of seg AB is

A. (3,1)

B. (3,-1)

C. (-3,1)

D. (-1,3)

Answer: B

Watch Video Solution

41. A triangle with vertices $(4, 0), (-1, -1), (3, 5)$, is

A. isosceles and right- angled

B. isosceles but not right -angled

C. right-angled but not isosceles

D. neither isosceles nor right -angled

Answer: A

Watch Video Solution

42. If B (1,3) is equidistant form A (6,1) and C (x,8) then : x =

A. 3 or -5

B. -3 or 5

C. -3 or 5

D. 3 or 5

Answer: B

Watch Video Solution

43. The points (1,5) , (2,4) and (3,3) are

A. vertices of an equilateral triangle

B. vertices of an isosceles triangle

C. vertices of a right-angle triangle

D. collinear

Answer: D

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44. If A $\equiv$ (0,0) and B $\equiv$ (4,-3) then the locus of the moving point P such that 2 PA = 3PB is

A. $5x^2 + 5y^2$+72x+54y+225=0

B. $5x^2 + 5y^2$-72x-54y+225=0

C. $5x^2 + 5y^2$-72x+54y+225=0

D. none of these

Answer: C

Watch Video Solution

45. If the points (x,y), (x',y') and (x'-x',y-y') are collinear then

A. xy=x'y'

B. xx'=yy'

C. xy'=x'y

D. none of these

Answer: C

Watch Video Solution

46. The vertices of a triangle are $(2, 4), B(2, 6), C\left(2+\sqrt{3}, 5\right)$. The triangle is :

A. isosceles and right- angled

B. always isosceles

C. right- angled

D. equilateral

Answer: D

Watch Video Solution

47. The triangle with vertices (0,0), (2,0) and (0,3) is

A. acute-angled

B. isosceles

C. right-angled

D. equilateral

Answer: C

Watch Video Solution

48. For what value of k are the points $(k, 2-2k), (-k+1, 2k) and (-4-k, 6-2k)$ collinear?

A. $\frac{1}{2}$

B. $-\frac{1}{2}$

C. 1

D. -1

Answer: D

Watch Video Solution

49. If the point P(x, y) be equidistant from the points $A(a+b, a-b)$ and $B(a-b, a+b)$ then

A. ax=by

B. bx=ay

C. ax=-by

D. bx=-ay

Answer: B

Watch Video Solution

50. If $P(1, 2)Q(4, 6), R(5, 7),$ and $S(a, b)$ are the vertices of a parallelogram $PQRS,$ then $a = 2, b = 4$ (b) $a = 3, b = 4$ $a = 2, b = 3$ (d) $a = 1$ or $b = -1$

A. a=2, b=4

B. a=3, b=4

C. a=2,b=3

D. a=3, b=5

Answer: C

Watch Video Solution

51. Prove that the line $y - x + 2 = 0$ divides the join of points (3,-1) and (8,9) in the ratio 2:3.

A. $2:3$

B. $3:2$

C. $-2:3$

D. $-3:2$

Answer: A

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52. The orthocentre of the triangle formed by the lines $xy = 0$ and $x + y = 1$, is

A. (-2-1)

B. (-2, 1)

C. (0,0)

D. none of these

Answer: C

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53. Find the equation of the straight line which makes an angle of 15° with the positive direction of x-axis and which cuts and intercept of length 4 on then negative direction of y-axis.

A. $(2-\sqrt{3})$x+y-4=0

B. $(2-\sqrt{3})$x-y-4=0

C. $(2-\sqrt{3})$xy-4=0

D. $(2+\sqrt{3}$x+y+4=0

Answer: B

Watch Video Solution

54. The equation of the straight line cutting off an no intercept 8 on x-axis and making an angle of 60° with the positive direction of y -axis is

A. x-$\sqrt{3}$y=8

B. x-$\sqrt{3}$ y=8

C. y=$\sqrt{3}$x+8

D. none of these

Answer: B

Watch Video Solution

55. A rectangle has two opposite vertices at the points (1,2) and (5,5). If the other vertices lie on the line x=3, then their coordinates are

A. (3,-1), (3,-6)

B. (3,1), (3,5)

C. (3,2), (3,6)

D. (3,1), (3,6)

Answer: D

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56. The equation of the line which passes through the point (3,4) and whos y-intercept is twice its x-intercept, is

A. $2x-y=0$

B. $x+2y=10$

C. $2x+y=10$

D. none of these

Answer: C

Watch Video Solution

57. Find the equation of the straight line whose intercepts on X-axis and Y-axis are respectively twice and thrice of those by the line $3x + 4y = 12$.

A. 9x+8y=72

B. 9x-8y=72

C. 8x+9y=72

D. 9y-8x=72

Answer: A

Watch Video Solution

58. find the equation of the straight line passing through the origin and the middle point of intercept of the line $ax + by + c = 0$between the axes

A. ax+by=0

B. ax-by=0

C. bx+ay=0

D. bx-ay=0

Answer: B

Watch Video Solution

59. Find the equation of the straight line upon which the length of perpendicular from origin is $3\sqrt{2}$ units and this perpendicular makes an angle of 75^0 with the positive direction of x-axis.

A. $\left(\sqrt{3}-1\right)x+\left(\sqrt{3}+1\right)y-12=0$

B. $\left(\sqrt{3}-1\right)x+\left(\sqrt{3}+1\right)y+12=0$

C. $\left(\sqrt{3}+1\right)x+\left(\sqrt{3}-1\right)y-12=0$

D. none of these

Answer: A

Watch Video Solution

60. Find the angle between $x + y = 3$ and the line joining points (1,1) and (-3,4)

A. $\tan^{-1}\left(\frac{3}{7}\right)$

B. $\pi - \tan^{-1}\left(\frac{3}{7}\right)$

C. $\tan^{-1}\left(\frac{1}{7}\right)$

D. $\pi - \tan^{-1}\left(\frac{1}{7}\right)$

Answer: C

Watch Video Solution

61. The equation of the line passing through (1,-2) and parallel to the line 8x-4y+7=0 is

A. 2x+y-4=0

B. 2x-y+4=0

C. 2x-y-4=0

D. 2x-y+6=0

Answer: C

Watch Video Solution

62. The equation of the line passing through (2,-4) and perpendicular form the point (2,4) on the line x+y=1 is

A. x+2y+6=0

B. x-2y+6=0

C. 2x+y+6=0

D. 2x-y+6=0

Answer: A

 Watch Video Solution

63. · The co-ordinates of foot of the perpendicular from the point $(2, 4)$on the line $x + y = 1$ are:

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

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

C. $\left(\frac{4}{3}, \frac{1}{2}\right)$

D. $\left(\frac{3}{4}, -\frac{1}{2}\right)$

Answer: B

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

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

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

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

Answer: A

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65. The value of k such that the lines $2x - 3y + k = 0, 3x - 4y - 13 = 0$ and $8x - 11y - 33 = 0$ are concurrent is

A. 7

B. -7

C. 5

D. -5

Answer: B

Watch Video Solution

66. 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

67. A square is constructed on the portion of $x + y = 5$, which is intercepted between the axes on the side of the line away from origin. The equations to the diagonals of the square are

A. x=5, y=-5

B. x=-5 , y=5

C. x=5, y=5

D. x-y=5 , x-y=-5

Answer: C

Watch Video Solution

68. The equation of the line with gradient $-\frac{3}{2}$ which is concurrent with the lines $4x + 3y - 7 = 0$ and $8x + 5y - 1 = 0$

A. 2y-3x-2=0

B. 3x+2y-2=0

C. 3x+2y-63=0

D. none of these

Answer: B

Watch Video Solution

69. The equations $ax + by + c = 0$ and $dx + ey + f = 0$ represent the same straight line if and only if

A. $\frac{a}{d} = \frac{b}{e}$

B. c=f

C. $\frac{a}{d} = \frac{b}{e} = \frac{c}{f}$

D. a=d, b=e, c=f

Answer: C

Watch Video Solution

70. Let PS be the median of the triangle with vertices $P(2, 2), Q(6, -1) and R(7, 3)$ Then equation of the line passing through $(1, -1)$ and parallel to PS is $2x - 9y - 7 = 0$

$2x - 9y - 11 = 0$ $2x + 9y - 11 = 0$

$2x + 9y + 7 = 0$

A. 2x-9y-7=0

B. 2x-9y-11=0

C. 2x+9y-11=0

D. 2x+9y-7=0

Answer: D

Watch Video Solution

71. If the lines $ax+12y+1=0$ $bx+13y+1=0$ and $cx+14y+1=0$ are concurrent then a,b,c are in

A. A.P.

B. G.P.

C. H.P.

D. none of these

Answer: A

Watch Video Solution

72. If (-4,5) is a vertex of a square and one of its diagonal is 7x-y+8-0.Find the equation of other diagonal

A. 7x-y+23=0

B. x+7y=31

C. x-7y=31

D. none of these

Answer: B

Watch Video Solution

73. The new co-ordinates of the point (4,5) when the origin is shifted to the point (1,-2) is

A. (5,3)

B. (3,5)

C. (3,7)

D. (7,3)

Answer: C

Watch Video Solution

74. If the sum of reciprocals of x-and y-inercepts of a line is a constant k then the line passes through the fixed point whose co-ordinates are

A. (k,k)

B. $\left(\frac{1}{k}, \frac{1}{k}\right)$

C. (k,-k)

D. (-k,-k)

Answer: B

View Text Solution

75. the lines $(p+2q)x+(p-3q)y=p-q$ for different values of $p\&q$ passes trough the fixed point is:

A. $\left(\frac{3}{2},\frac{5}{2}\right)$

B. $\left(\frac{2}{5},\frac{2}{5}\right)$

C. $\left(\frac{3}{5},\frac{3}{5}\right)$

D. $\left(\frac{2}{5},\frac{3}{5}\right)$

Answer: D

Watch Video Solution

76. Show that the straight line $x(a+2b)+y(a+3b)=(a+b)$ for different values of a and b passes through the fixed point . Find that point

A. (2,1)

B. (2,-1)

C. (-2,1)

D. (-2,-1)

Answer: B

Watch Video Solution

77. The diagonals of a parallelogram ABCD are along are the lines $x+3y=4$ and $6x-2y=7$. Then ABCD must be a

A. rectangle

B. kite

C. cyclic quadrilateral

D. rhombus

Answer: D

Watch Video Solution

78. If a+b+c=0 then the line 3ax+by+2c=0 passes through the fixed point

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

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

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

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

Answer: B

Watch Video Solution

79. Equation of a straight line passing through the point of intersection of $x - y + 1 = 0$ and $3x + y - 5 = 0$ are perpendicular to one of them is

A. x+y+3=0

B. x+y-3=0

C. x-3y-5=0

D. x+3y+5=0

Answer: B

Watch Video Solution

80. The lines $x\cos\alpha + y\sin\alpha = P_1$ and $x\cos\beta + y\sin\beta = P_2$ will be perpendicular, if :

A. $\alpha = \frac{\pi}{2}$

B. $\alpha = \beta$

C. $\alpha \pm \beta = \frac{\pi}{2}$

D. $|\alpha - \beta| = \frac{\pi}{2}$

Answer: D

Watch Video Solution

81. If the point P(x, y) is equidistant from the points A(a + b, b-a) and B(a-b, a + b). Prove that bx = ay.

A. ax=by

B. bx=ay

C. ax=-by

D. bx=-ay

Answer: B

Watch Video Solution

82. The points $(a, b + c)$, $(b, c + a)$ and $(c, a + b)$

A. vertices of an equilateral triangle

B. vertices of a right angled triangle

C. concyclic

D. collinear

Answer: D

 Watch Video Solution

83. Points A (a,3) and C (5,b) are opposite vertices of a rectangle ABCD. If the other two vertices lie on the line y=2x +c which passes through the point (a,b), then : c=

A. -7

B. -4

C. 0

D. 7

Answer: A

 Watch Video Solution

84. If a, b, c are in harmonic progression, then the straight line $\left(\left(\frac{x}{a}\right)\right)_{\frac{y}{b}} + \left(\frac{l}{c}\right) = 0$ always passes through a fixed point. Find that point.

A. (1,-2)

B. (1,-1/2)

C. (-1,2)

D. (-1,-2)

Answer: A

Watch Video Solution

85. Let A (2,-3) and B(-2,1) be vertices of a triangle ABC. If the centroid of this triangle moves on line 2x + 3y = 1, then the locus of the vertex C is the line :

A. $3x+2y=5$

B. $2x-3y=7$

C. $2x+3y=9$

D. $3x-2y=3$

Answer: C

 Watch Video Solution

86. For any real values of a,b,c such that 3a, +2b+4c=0, line ax+by+c=0 passes through the fixed point whose coordinates are

A. (3,2)

B. (2,4)

C. (3,4)

D. (3/4,1/2)

Answer: D

Watch Video Solution

87. The equations of sides of a triangle are $x+3y=0$, $4x-3y=5$ and $3x-y=0$. Then the line $6x-7y=0$ passes through the _____ of the triangle.

A. incentre

B. centroid

C. circumcentre

D. orthocentre

Answer: D

 Watch Video Solution

88. Ifa,b,c are in A.P., a,x,b,are in G.P and b,y,c are also in G.P then the point (x,y) lies on

A. a line

B. a circle

C. an ellipse

D. a hyperbola

Answer: B

Watch Video Solution

89. If we reduce $3x + 3y + 7 = 0$ to the form $x\cos\alpha + y\sin\alpha = p$, then the value of p is $\frac{7}{2\sqrt{3}}$

(b) $\frac{7}{3}$ (c) $\frac{3\sqrt{7}}{2}$ (d) $\frac{7}{3\sqrt{2}}$

A. $\frac{7}{2\sqrt{3}}$

B. $\frac{7}{3}$

C. $\frac{3\sqrt{7}}{2}$

D. $\frac{7}{3\sqrt{2}}$

Answer: D

Watch Video Solution

90. The length of perpendicular from the point ($a\cos\propto, a\sin\propto$) upon the striaght line y = x $\tan\propto + c$ (where c gt 0) is

A. c

B. c. $\sin^2 \alpha$

C. c.cos α

D. c.sec$^2 \alpha$

Answer: C

Watch Video Solution

91. the line $\frac{x}{a} - \frac{y}{b} = 1$ cuts the x-axes at P.the equation of the line passes through point P and perpendicular to the line is:

A. x+y=ab

B. x+y=a+b

C. ax+by=a^2

D. bx+ay=a^2

Answer: C

Watch Video Solution

92. If (-4,5) is a vertex of a square and one of its diagonal is 7x-y+8-0.Find the equation of other diagonal

A. x+3y=21

B. 2x=3y=7

C. x+7y=31

D. 2x+3y=21

Answer: C

Watch Video Solution

93. If a,b,c $>$ 0, then area of the triangle formed by the line ax+by+c=0 and coordinatte axes is

A. $\frac{a^2}{2abc}$

B. $\frac{b^2}{2abc}$

C. $\frac{c^2}{2abc}$

D. 0

Answer: C

Watch Video Solution

94. If the line ax+by+c=0 always passes through the fixed point (1,-2) then : a,b,c are in

A. A.P.

B. G.P.

C. H.P.

D. none of these

Answer: A

 Watch Video Solution

95. A square of area 25 sq.units is formed by taking two sides as $3x + 4y = k_1$ and $3x + 4y = k_2$ then $|k_1 - k_2| =$

A. 5

B. 1

C. 25

D. 20

Answer: C

Watch Video Solution

96. Segment joining (1,2) and (-2,1) is divided by the line 3x+4y=7 in the ration

A. $3:4$

B. $4:3$

C. $9:4$

D. $4:9$

Answer: D

Watch Video Solution

97. The medians AD and BE of the triangle with vertices A(0, b), B(0, 0) and C(a, 0) are mutually perpendicular if

A. b=$a\sqrt{2}$

B. a=$b\sqrt{2}$

C. b=$-a\sqrt{2}$

D. a=$5b\sqrt{2}$

Answer: B

 Watch Video Solution

98. Vertices of a triangle are A (6,0), B (0,6) and C(6,6). The distance between its circumcentre and orthocentre is

A. $2\sqrt{2}$

B. 2

C. $3\sqrt{2}$

D. 1

Answer: C

Watch Video Solution

99. If a vertex of a triangle is $(1, 1)$, and the middle points of two sides passing through it are $-2, 3)$ and $(5, 2)$, then find the centroid and the incenter of the triangle.

A. (5/3,3)

B. (5/3,-3)

C. (-5/3,3)

D. (-5/3,-3)

Answer: A

Watch Video Solution

100. Find the points on the line $x + y = 4$ that lies at a unit distance from the line $4x + 3y = 10$.

A. (5,-1)

B. (-7,11)

C. (3,-1)

D. (7,-11)

Answer: B

Watch Video Solution

101. A rectangle has two opposite vertices at the points (1,2) and (5,5). If the other vertices lie on the line x=3, then their coordinates are

A. (3,-1), (3,-6)

B. (3,1), (3,5)

C. (3,2), (3,6)

D. (3,1) ,(3,6)

Answer: D

Watch Video Solution

102. Find the equation of the straight line passing through the origin and bisecting the portion of the line $ax + by + c = 0$ intercepted between the coordinate axes.

A. ax+by=0

B. ax-by=0

C. bx+ay=0

D. bx=ay=0

Answer: B

Watch Video Solution

103. Diagonals of a parallelogram PQRS must be a

A. rectangle

B. square

C. cyclic quadrilateral

D. rhombus

Answer: D

View Text Solution

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

A. 43833

B. 43864

C. 1

D. 43924

Answer: D

Watch Video Solution

105. The distance of the mid point of the line joining the points $(a\sin\theta, 0)$ and $(0, a\cos\theta)$ from the origin is

A. $\frac{a}{2}$

B. $\frac{a}{2}(\sin\theta + \cos\theta)$

C. a$(\sin\theta + \cos\theta)$

D. a

Answer: A

Watch Video Solution

106. If the straight line $ax + cy = 2b,$ where $a, b, c > 0,$ makes a triangle of area 2 sq. units with the coordinate axes, then a, b, c are in GP a, -b; c are in GP $a, 2b, c$ are in GP (d) $a, -2b, c$ are in GP

A. a,b,c are in G.P.

B. a,-b,-c are in G.P.

C. a,2b,c are in G.P.

D. a,-2b,c are in G.P.

Answer: A

Watch Video Solution

107. If $P_1 \text{and} P_2$ are the lenghts of perpendiculars from origin to the lines x. sec a+y . Csc a=2a and x.cos α+y. sin α =a cos 2 α,

A. $4\sin^2 4\alpha$

B. $4\cos^2 4\alpha$

C. $4\csc^2 4\alpha$

D. $4\sec^2 4\alpha$

Answer: C

View Text Solution

108. If $A(-1, 3)$, $B(1, -1)$ and $C(5, 1)$ are the vertices of a triangle ABC, what is the length of the median through vertex A?

A. 5

B. 4

C. 1

D. 3

Answer: A

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109. The equation of the locus of the point whose distance from the x-axis is twice that of from the y-axis is :

A. $y=x$

B. $y=2x$

C. $x=y$

D. $x=2y$

Answer: D

Watch Video Solution

110. Show that the points $(3, 3), (h, 0)$ and $(0, k)$ are collinear if $\frac{1}{h} + \frac{1}{k} = \frac{1}{3}$

A. $\frac{1}{h} + \frac{1}{k} + = \frac{1}{3}$

B. $\frac{1}{h} - \frac{1}{k} = \frac{1}{3}$

C. $\frac{1}{k} - \frac{1}{h} = \frac{1}{3}$

D. $\frac{1}{h} = \frac{1}{k}$

Answer: A

Watch Video Solution

111. if $(3, -4), (-6, 5)$ are the exterimities of the diagonal of the parallelogram and $(-2, -1)$ is itts third vertex then find fourth vertex,

A. (1,0)

B. (-1,0)

C. (0,1)

D. (0,-1)

Answer: B

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112. If P(1,0), Q(-1,0) and R (2,0) are three given points, then the locus of the point S satisfying the relation $(SQ)^2 + (SR)^2 = 2(SP)^2$

A. a line || to X-axis

B. a line || to Y-axis

C. circle with centre at origin

D. none of these

Answer: B

Watch Video Solution

113. The distance of the mid point of the line joining the points $(a\sin\theta, 0)$ and $(0, a\cos\theta)$ from the origin is

A. a

B. $\frac{a}{2}(\sin\theta + \cos\theta)$

C. $a(\sin\theta + \cos\theta)$

D. $\frac{a}{2}$

Answer: D

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114. If a triangle has it's orthocenter at (1,1) and circumcentre (3/2,3/4) then centroid is:

A. $\left(\frac{4}{3}, -\frac{5}{6}\right)$

B. $\left(\frac{4}{3}, \frac{5}{6}\right)$

C. $\left(-\frac{4}{3}, \frac{5}{6}\right)$

D. $\left(-\frac{4}{3}, -\frac{5}{6}\right)$

Answer: B

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115. The vertices of a triangle are (0,3) ,(-3,0) and (3,0) . The coordinates of its orthocentre are

A. $\left(\frac{3}{4}, 2\right)$

B. (0,0)

C. $\left(1, \frac{4}{3}\right)$

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

Answer: B

Watch Video Solution

116. If the orthocentre and centroid of a triangle are (-3, 5) and (3, 3) then its circumcentre is

A. (0,4)

B. (6,-2)

C. (6,2)

D. (0,8)

Answer: C

 Watch Video Solution

117. The medians AD and BE of the triangle with vertices A(0, b), B(0, 0) and C(a, 0) are mutually perpendicular if

A. $a = \frac{b}{2}$

B. $b=\frac{a}{2}$

C. ab=1

D. $a=\pm\sqrt{2b}$

Answer: D

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118. The point which divides the join of (1,2) and(3,4) externally in the ratio 1:1 a. lies in the III quadrant b. lies in the II quadrant c. lies in the I quadrant d. cannot be found

A. lies in the third quadrant

B. lies in the second quadrant

C. lies in the first quadrant

D. cnnont be found

Answer: D

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119. The points $(-a, -b)$, $(0, 0)$. (a, b) and $\left(a^2, a^3\right)$ are

A. vertices of a rectangle

B. vertices of a parallelogram

C. collinear

D. none of these

Answer: C

Watch Video Solution

120. If A and B are two points on the line joining P (2,5) and Q (4,-7) such that PA =AB=BQ then the mid point of seg AB is

A. (3,1)

B. (3,-1)

C. (-3,1)

D. (-1,3)

Answer: B

Watch Video Solution

121. A triangle with vertices $(4, 0), (-1, -1), (3, 5)$, is

A. isosceles and right- angled

B. isosceles but not right -angled

C. right-angled but not isosceles

D. neither isosceles nor right -angled

Answer: A

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122. If B (1,3) is equidistant from A (6,1) and C (x,8) then x =

A. 3 or -5

B. -3 or 5

C. -3 or 5

D. 3 or 5

Answer: B

Watch Video Solution

123. The points (1,5) , (2,5) and (3,3) are

A. vertices of an equilateral triangle

B. vertices of an isosceles triangle

C. vertices of a right-angle triangle

D. collinear

Answer: D

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124. If A $\equiv$ (0,0) and B $\equiv$ (4,-3) then the locus of the moving point P such that 2 PA = 3PB is

A. $5x^2 + 5y^2$+72x+54y+225=0

B. $5x^2 + 5y^2$-72x-54y+225=0

C. $5x^2 + 5y^2$-72x+54y+225=0

D. none of these

Answer: C

Watch Video Solution

125. If the points (x,y), (x',y') and (x'-x',y-y') are collinear then

A. xy=x'y'

B. xx'=yy'

C. xy'=x'y

D. none of these

Answer: C

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126. The triangle with vertices (2,4), (2,6) and ($2+\sqrt{3}$,5) is

A. isosceles and right- angled

B. always isosceles

C. right- angled

D. equilateral

Answer: D

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127. The triangle with vertices (0,0), (2,0) and (0,3) is

A. acute-angled

B. isosceles

C. right-angled

D. equilateral

Answer: C

Watch Video Solution

128. For what value of k are the points $(k, 2-2k), (-k+1, 2k) and (-4-k, 6-2k)$ collinear?

A. $\frac{1}{2}$

B. $-\frac{1}{2}$

C. 1

D. -1

Answer: D

Watch Video Solution

129. If the point (x, y) is equidistant from the points (a+b, b-a) and (a-b, a+b), then prove that bx=ay.

A. ax=by

B. bx=ay

C. ax=-by

D. bx=-ay

Answer: B

Watch Video Solution

130. If $P(1, 2)Q(4, 6), R(5, 7),$ and $S(a, b)$ are the vertices of a parallelogram $PQRS,$ then $a = 2, b = 4$ (b) $a = 3, b = 4$ $a = 2, b = 3$ (d) $a = 1$ or $b = -1$

A. a=2, b=4

B. a=3, b=4

C. a=2,b=3

D. a=3, b=5

Answer: C

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131. In what ratio does the line x -y - 2 = 0 divides the line segment joining (3, -1) and (8, 9) ?

A. $2:3$

B. $3:2$

C. $-2:3$

D. $-3:2$

Answer: A

Watch Video Solution

132. The co-ordinates of the orthocentre formed by the lines x =0, y=0 and x+y=1 are

A. (-2-1)

B. (-2, 1)

C. (0,0)

D. none of these

Answer: C

 Watch Video Solution

133. Find the equation of the straight line which makes an angle of 15° with the positive direction of x-axis and which cuts and intercept of length 4 on then negative direction of y-axis.

A. $(2-\sqrt{3})$x+y-4=0

B. $(2-\sqrt{3})$x-y-4=0

C. $(2-\sqrt{3})$xy-4=0

D. $(2+\sqrt{3}$x+y+4=0

Answer: B

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134. The equation of the straight line cutting off an no intercept 8 on x-axis and making an angle of 60° with the positive direction of y -axis is

A. x-$\sqrt{3}$y=8

B. x-$\sqrt{3}$ y=8

C. y=$\sqrt{3}$x+8

D. none of these

Answer: B

Watch Video Solution

135. A rectangle has two opposite vertices at the points (1,2) and (5,5). If the other vertices lie on the line x=3, then their coordinates are

A. (3,-1), (3,-6)

B. (3,1), (3,5)

C. (3,2), (3,6)

D. (3,1), (3,6)

Answer: D

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136. The equation of the line which passes through the point (3,4) and whos y-intercept is twice its x-intercept, is

A. $2x-y=0$

B. $x+2y=10$

C. $2x+y=10$

D. none of these

Answer: C

Watch Video Solution

137. Find the equation of the straight line whose intercepts on X-axis and Y-axis are respectively twice and thrice of those by the line $3x + 4y = 12$.

A. 9x+8y=72

B. 9x-8y=72

C. 8x+9y=72

D. 9y-8x=72

Answer: A

Watch Video Solution

138. find the equation of the straight line passing through the origin and the middle point of intercept of the line $ax + by + c = 0$between the axes

A. ax+by=0

B. ax-by=0

C. bx+ay=0

D. bx-ay=0

Answer: B

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139. Find the equation of the straight line upon which the length of perpendicular from origin is $3\sqrt{2}$ units and this perpendicular makes an angle of 75^0 with the positive direction of x-axis.

A. $(\sqrt{3}-1)x+(\sqrt{3}+1)y-12=0$

B. $(\sqrt{3}-1)x+(\sqrt{3}+1)y+12=0$

C. $(\sqrt{3}+1)x+(\sqrt{3}-1)y-12=0$

D. none of these

Answer: A

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140. Find the angle between $x + y = 3$ and the line joining points (1,1) and (-3,4)

A. $\tan^{-1}\left(\frac{3}{7}\right)$

B. $\pi - \tan^{-1}\left(\frac{3}{7}\right)$

C. $\tan^{-1}\left(\frac{1}{7}\right)$

D. $\pi - \tan^{-1}\left(\frac{1}{7}\right)$

Answer: C

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141. The equation of the line passing through (1,-2) and parallel to the line 8x-4y+7=0 is

A. 2x+y-4=0

B. 2x-y+4=0

C. 2x-y-4=0

D. 2x-y+6=0

Answer: C

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142. The equation of the line passing through (2,-4) and perpendicular form the point (2,4) on the line x+y=1 is

A. x+2y+6=0

B. x-2y+6=0

C. 2x+y+6=0

D. 2x-y+6=0

Answer: A

 Watch Video Solution

143. · The co-ordinates of foot of the perpendicular from the point $(2, 4)$on the line $x + y = 1$ are:

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

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

C. $\left(\frac{4}{3}, \frac{1}{2}\right)$

D. $\left(\frac{3}{4}, -\frac{1}{2}\right)$

Answer: B

Watch Video Solution

144. Find the coordinates of the foot of the perpendicular drawn from the point (2,3) to the line $y = 3x + 4$

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

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

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

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

Answer: A

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145. The value of k such that the lines $2x - 3y + k = 0, 3x - 4y - 13 = 0$ and $8x - 11y - 33 = 0$ are concurrent is

A. 7

B. -7

C. 5

D. -5

Answer: B

Watch Video Solution

146. 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

147. A square is constructed on the portion of $x + y = 5$, which is intercepted between the axes on the side of the line away from origin. The equations to the diagonals of the square are

A. x=5, y=-5

B. x=-5 , y=5

C. x=5, y=5

D. x-y=5 , x-y=-5

Answer: C

Watch Video Solution

148. The equation of the line with gradient $-\frac{3}{2}$ which is concurrent with the lines $4x + 3y - 7 = 0$ and $8x + 5y - 1 = 0$

A. 2y-3x-2=0

B. 3x+2y-2=0

C. 3x+2y-63=0

D. none of these

Answer: B

Watch Video Solution

149. The equations $ax + by + c = 0$ and $dx + ey + f = 0$ represent the same straight line if and only if

A. $\frac{a}{d} = \frac{b}{e}$

B. c=f

C. $\frac{a}{d} = \frac{b}{e} = \frac{c}{f}$

D. a=d, b=e, c=f

Answer: C

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150. Let PS be the median of the triangle with vertices $P(2, 2), Q(6, -1) and R(7, 3)$ Then equation of the line passing through $(1, -1)$ and parallel to PS is $2x - 9y - 7 = 0$

$2x - 9y - 11 = 0$ $2x + 9y - 11 = 0$

$2x + 9y + 7 = 0$

A. 2x-9y-7=0

B. 2x-9y-11=0

C. 2x+9y-11=0

D. 2x+9y-7=0

Answer: D

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151. If the lines $ax+12y+1=0$ $bx+13y+1=0$ and $cx+14y+1=0$ are concurrent then a,b,c are in

A. A.P.

B. G.P.

C. H.P.

D. none of these

Answer: A

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152. If (-4,5) is a vertex of a square and one of its diagonal is 7x-y+8-0.Find the equation of other diagonal

A. 7x-y+23=0

B. x+7y=31

C. x-7y=31

D. none of these

Answer: B

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153. The new co-ordinates of the point (4,5) when the origin is shifted to the point (1,-2) is

A. (5,3)

B. (3,5)

C. (3,7)

D. (7,3)

Answer: C

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154. A straight line moves so that the sum of the reciprocals of its intercepts on two perpendicular lines is constant then the line passes through-

A. (k,k)

B. $\left(\frac{1}{k}, \frac{1}{k}\right)$

C. (k,-k)

D. (-k,-k)

Answer: B

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155. the lines $(p+2q)x+(p-3q)y=p-q$ for different values of $p\&q$ passes trough the fixed point is:

A. $\left(\frac{3}{2},\frac{5}{2}\right)$

B. $\left(\frac{2}{5},\frac{2}{5}\right)$

C. $\left(\frac{3}{5},\frac{3}{5}\right)$

D. $\left(\frac{2}{5},\frac{3}{5}\right)$

Answer: D

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156. Show that the straight line $x(a+2b)+y(a+3b)=(a+b)$ for different values of a and b passes through the fixed point . Find that point

A. (2,1)

B. (2,-1)

C. (-2,1)

D. (-2,-1)

Answer: B

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157. The diagonals of a parallelogram ABCD are along are the lines $x+3y=4$ and $6x-2y=7$. Then ABCD must be a

A. rectangle

B. kite

C. cyclic quadrilateral

D. rhombus

Answer: D

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158. If a+b+c=0 then the line 3ax+by+2c=0 passes through the fixed point

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

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

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

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

Answer: B

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159. Equation of a straight line passing through the point of intersection of $x - y + 1 = 0$ and $3x + y - 5 = 0$ are perpendicular to one of them is

A. x+y+3=0

B. x+y-3=0

C. x-3y-5=0

D. x+3y+5=0

Answer: B

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160. The lines $x\cos\alpha + y\sin\alpha = P_1$ and $x\cos\beta + y\sin\beta = P_2$ will be perpendicular, if :

A. $\alpha = \frac{\pi}{2}$

B. $\alpha = \beta$

C. $\alpha \pm \beta = \frac{\pi}{2}$

D. $|\alpha - \beta| = \frac{\pi}{2}$

Answer: D

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