MATHS

BOOKS - OBJECTIVE RD SHARMA ENGLISH

PAIR OF STRAIGHT LINES

Illustration

1. If the equation $2x^2 + kxy + 2y^2 = 0$ represents a pair of real and distinct lines , then find the values of k.

A. $\lambda \in (-4, 4)$

B. $\lambda \in R$

C. $\lambda \in (-\infty, -4) \cup (4, \infty)$

D. $\lambda = 4, \ -4$

Answer: C

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2. If the pair of lines represented by $ax^2 + 2hxy + by^2 = 0, b \neq 0$, are such that the sum of the slopes of the lines is three times the product of their slopes, then

A. $3b + 2h = 0$

B. $3a + 2h = 0$

C. $2a + 3h = 0$

D. none of these

Answer: B

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3. Show that the two straight lines

$$x^2\left(\tan^2\theta+\cos^2\theta\right)-2xy\tan\theta+y^2\sin^2\theta=0$$

Make with the axis of x angles such that the difference of their tangents is 2 .

A. 4

B. 3

C. 2

D. none of these

Answer: C

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4. If the sum of the slopes of the lines given by $4x^2 + 2\lambda xy - 7y^2 = 0$ is equal to the product of the slope, then λ is equal to

A. -4

B. 4

C. -2

D. 2

Answer: C

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5. If the sum of the slopes of the lines given by $x^2 + 2cxy - y^2 = 0$ is four times their product, then c has the value

A. -2

B. -1

C. 2

D. 1

Answer: A

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6. If the slopes of the lines given by $ax^2 + 2hxy + by^2 = 0$ are in the ratio $3:1$, then $h^2 =$

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

B. $\frac{4ab}{3}$

C. $\frac{4a}{3b}$

D. none of these

Answer: B

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7. If the slope of one line in the pair $ax^2 + 4xy + y^2 = 0$ is three times the other, then a =

A. 3

B. 1

C. -3

D. -1

Answer: A

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8. The combined equation of the pair of lines through the origin and perpendicular to the pair of lines given by $ax^2 + 2hxy + by^2 = 0$, is

A. $ax^2 - 2hxy + by^2 = 0$

B. $bx^2 + 2hxy + ay^2 = 0$

C. $bx^2 - 2hxy + ay^2 = 0$

D. $bx^2 + 2hxy - ay^2 = 0$

Answer: C

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9. Equation of pair of straight lines drawn through (1, 1) and perpendicular to the pair of lines $3x^2 - 7xy + 2y^2 = 0$, is

A. $2x^2 + 7xy - 11x + 6 = 0$

B. $2(x-1)^2 + 7(x-1)(y-1) - 3y^2 = 0$

C. $2(x-1)^2 + 7(x-1)(y-1) - 3(y-1)^2 = 0$

D. none of these

Answer: D

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10. The equation to the pair of lines perpendicular to the pair of lines $3x^2 - 4xy + y^2 = 0$, is

A. $x^2 + 4xy + 3y^2 = 0$

B. $x^2 - 4xy - 3y^2 = 0$

C. $x^2 + 4xy + y^2 = 0$

D. none of these

Answer: A

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11. If the slope of one of the lines given by $ax^2 + 2hxy + by^2 = 0$ is 5 times the other, then

A. $5h^2 = ab$

B. $5h^2 = 9ab$

C. $9h^2 = 5ab$

D. $h^2 = ab$

Answer: B

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12. If one of the lines represented by the equation $ax^2 + 2hxy + by^2 = 0$ is coincident with one of the lines represented by $a'x^2 + 2h'xy + b'y^2 = 0$, then

A. $(h'b - hb')(ha' - h'a)$

B. $4(h'b - hb')(ha' - h'a)$

C. $2(h'b - hb')(ha' - h'a)$

D. $4(h'b + hb')(ha' + h'a)$

Answer: B

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13. If one of the lines represented by the equation $ax^2 + 2hxy + by^2 = 0$ is coincident with one of the lines represented by $a'x^2 + 2h'xy + b'y^2 = 0$, then

A. $4(ha' + h'a)(hb' + h'b)$

B. $-4(ha' + h'a)(hb' + h'b)$

C. $-4(ha' + h'a)(hb' + h'b)$

D. $-4(ha' - h'a)(hb - h'b)$

Answer: B

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14. If the slope of one of the lines represented by $ax^2 + 2hxy + by^2 = 0$ is the square of the other , then $\frac{a+b}{h} + \frac{8h^2}{ab} =$

A. 2

B. 4

C. 6

D. 1

Answer: C

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15. The image of the pair of lines represented by $ax^2 + 2hxy + by^2 = 0$by the line mirror $y = 0$ is

A. $ax^2 - 2hxy + by^2 = 0$

B. $bx^2 + 2hxy + ay^2 = 0$

C. $bx^2 - 2hxy + ay^2 = 0$

D. none of these

Answer: A

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16. Difference of slopes of the lines represented by the equation $x^2\left(\sec^2\theta - \sin^2\theta\right) - 2xy\tan\theta + y^2\sin^2\theta = 0$ is

(A) 4

(B) 3

(C) 2

(D) None of these

A. 4

B. 2

C. -4

D. 6

Answer: B

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17. The product of perpendiculars let fall from the point (x_1, y_1) upon the lines represented by $ax^2 + 2hxy + by^2$, is

A. $\frac{|ax_1^2 + 2hx_1y_1 + by_1^2|}{\sqrt{(a-b)^2 + 4h^2}}$

B. $\frac{|ax_1^2 + 2hx_1y_1 + by_1^2|}{\sqrt{(a-b)^2 + h^2}}$

C. $\frac{|ax_1^2 + 2hx_1y_1 + by_1^2|}{\sqrt{(a+b)^2 + 4h^2}}$

D. $\frac{|ax_1^2 - 2hxy_1y_1 + by_1^2|}{\sqrt{(a-b)^2 + 4h^2}}$

Answer: A

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18. The angle between the pair of straight lines $y^2 \sin^2\theta - xy\sin\theta + x^2(\cos^2\theta - 1) = 0$ is

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

B. $\frac{\pi}{4}$

C. $\frac{2\pi}{3}$

D. none of these

Answer: D

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19. The two lines represented by $3ax^2 + 5xy + (a^2 - 2)y^2 = 0$ are perpendicular to each other for two values of a (b) a for one value of a (d) for no values of a

A. two values of a

B. for one value of a

C. for one value of a

D. for no value of a

Answer: A

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20. The angle between the lines $2x^2 - 7xy + 3y^2 = 0$ is 1.60^0

2. 45^0 3. $\tan^{-1}(7/6)$ 4. 30^0

A. 60°

B. 45°

C. $\tan^{-1}\left(\frac{7}{6}\right)$

D. 30°

Answer: B

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21. Find the angle between the lines represented by $x^2 + 2xy\sec\theta + y^2 = 0$

A. 4θ

B. 2θ

C. θ

D. none of these

Answer: C

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22. If the angle θ is acute, then the acute angle between $x^2(\cos\theta - \sin\theta) + 2xy\cos\theta + y^2(\cos\theta + \sin\theta) = 0,$ is

A. 2θ

B. $\theta/3$

C. θ

D. $\theta/2$

Answer: C

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23. If θ is the acute angle between the lines given by $x^2 - 2pxy + y^2 = 0$, then

A. $\cos\theta = p$

B. $\tan\theta = p$

C. $\sec\theta = p$

D. $\cot\theta = p$

Answer: C

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24. if coordinate axes are the angle bisectors of the pair of lines $ax^2 + 2hxy + by^2 = 0$ then

A. $a + b = 0$

B. $h = 0$

C. $h \neq 0, a + b = 0$

D. $a + b \neq 0$

Answer: B

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25. If $x^2 - 2pxy - y^2 = 0$ and $x^2 - 2qxy - y^2 = 0$ bisect angles between each other, then find the condition.

A. $p + q = 1$

B. $pq = 1$

C. $pq + 1$

D. $p^2 + pq + q^2 = 0$

Answer: C

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26. If the equation

$2x^2 + 7xy + 3y^2 - 9x - 7y + k = 0$

represents a pair of lines, then k is equal to

A. 4

B. 2

C. 1

D. -4

Answer: A

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27. The equation $x^3 - yx^2 + x - y = 0$ represents

A. a hyperboal

B. an ellipse

C. a pair of straight lines

D. a rectangular hyperbola

Answer: C

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28. Distance between the pair of lines represented by the equation $x^2 - 6xy + 9y^2 + 3x - 9y - 4 = 0$, is

A. $\frac{15}{\sqrt{10}}$

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

C. $\sqrt{\frac{5}{2}}$

D. $\frac{1}{\sqrt{10}}$

Answer: C

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29. The equation $x^2 - 3xy + \lambda y^2 + 3x - 5y + 2 = 0$ where λ is a real number, represents a pair of straight lines. If θ is the angle between the lines, then $\cos ec^2\theta =$

A. 2

B. 0

C. 3

D. 1

Answer: B

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30. The equation $ax^2 + 2\sqrt{ab}xy + by^2 + 2gx + 2fy + c = 0$ represents a pair of parallel straight lines, if

A. $ag = bf^2$

B. $a^2g = b^2f$

C. $bg^2 = af^2$

D. $b^2g = a^2f$

Answer: C

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31. If the equation

$ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$

represents two straights lines, then the product of the perpendicular from the origin on these straight lines, is

A. $\frac{c}{\sqrt{(a-b)^2 - 4h^2}}$

B. $\frac{c}{\sqrt{(a-b)^2+4h^2}}$

C. $\frac{c}{\sqrt{(a+b)^2-4h^2}}$

D. none of these

Answer: B

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32. If $ax^2+2hxy+by^2+2gx+2fy+c=0$ represents two parallel straight lines, then

A. $h^2=ab$

B. $bg^2=af^2$

C. $hg=af$

D. all of these

Answer: D

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33. $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$

A. $2\sqrt{\frac{g^2 - ac}{a(a+b)}}$

B. $2\sqrt{\frac{g^2 - ac}{h^2 - a^2}}$

C. $2\sqrt{\frac{f^2 - bc}{h^2 + b^2}}$

D. all of these

Answer: D

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34. The equation of pair of lines joining origin to the points of intersection of $x^2 + y^2 = 9$ and $x + y = 3$

A. $x^2 + (3 - x)^2 = 9$

B. $xy = 0$

C. $(3 + y)^2 + y^2 = 9$

D. $(x - y)^2 = 9$

Answer: B

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35. Prove that the angle between the lines joining the origin to the points of intersection of the straight line $y = 3x + 2$ with

the curve $x^2 + 2xy + 3y^2 + 4x + 8y - 11 = 0$ is $\tan^{-1}\left(\frac{2\sqrt{2}}{3}\right)$

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

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

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

D. $2\sqrt{2}$

Answer: B

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36. The acute angle between lines joining origin and intersection points of line $\sqrt{3}x + y - 2 = 0$ and the circle $x^2 + y^2 = 4$ is

A. $\frac{\pi}{6}$

B. $\frac{\pi}{4}$

C. $\frac{\pi}{3}$

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

Answer: C

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37. Prove that the straight lines joining the origin to the point of intersection of the straight line $hx + ky = 2hk$ and the curve $(x-k)^2 + (y-h)^2 = c^2$ are perpendicular to each other if $h^2 + k^2 = c^2$.

A. $h^2 + k^2 = c^2$

B. $h^2 + k^2 = 2c^2$

C. $h^2 - k^2 = c^2$

D. none of these

Answer: A

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38. If the lines joining the origin to the points of intersection of the line $y = mx + 2$ and the curve $x^2 + y^2 = 1$ are at right-angles, then

A. $m^2 = 1$

B. $m^2 = 2$

C. $m^2 = 7$

D. $2m^2 = 1$

Answer: C

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Section I Solved Mcqs

1. The equation $ax^2 + by^2 + cx + cy = 0$ represent a pair of straight lines , if

A. $a + b = 0$

B. $a + c = 0$

C. $b + c = 0$

D. none of these

Answer: A

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2. The equation $3x^2 + 2hxy + 3y^2 = 0$ represents a pair of straight lines passing through the origin . The two lines are

A. real and distinct if $h^2 > 3$

B. real and distinct if $h^2 > 9$

C. real and coincident if $h^2 = 3$

D. real and coincident if $h^2 > 3$

Answer: B

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3. If the pairs of straight lines $ax^2 + 2hxy - ay^2 = 0$ and $bx^2 + 2gxy - by^2 = 0$ be such

that each bisects the angles between the other , then prove that hg+abd=0.

A. $hg + ab = 0$

B. $ah + bg = 0$

C. $h^2 - ab = 0$

D. $ag + bh = 0$

Answer: A

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4. If $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ represents parallel straight lines, then

A. $hf = bg$

B. $h^2 = bc$

C. $a^2 f = b^2 g$

D. none of these

Answer: A

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5. If the equation $12x^2 + 7xy - py^2 - 18x + qy + 6 = 0$ represents a pair of perpendicular straight lines, then

A. $p - 12, q = -1$

B. $p = -12, q = 1$

C. $p = 12, q = 1$

D. $p = 1, q = 12$

Answer: C

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6. The equation $8x^2 + 8xy + 2y^2 + 26x + 13y + 15 = 0$ represents a pair of straight lines. The distance between them is

A. $\frac{7}{\sqrt{5}}$

B. $\frac{7}{2\sqrt{5}}$

C. $\sqrt{\frac{7}{5}}$

D. none of these

Answer: B

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7. Let PQR be a right-angled isosceles triangle, right angled at $P(2, 1)$. If the equation of the line QR is $2x + y = 3$, then the equation representing the pair of lines PQ and PR is

$3x^2 - 3y^2 + 8xy + 20x + 10y + 25 = 0$

$3x^2 - 3y^2 + 8xy - 20x - 10y + 25 = 0$

$3x^2 - 3y^2 + 8xy + 10x + 15y + 20 = 0$

$3x^2 - 3y^2 - 8xy - 15y - 20 = 0$

A. $3x^2 - 3y^2 + 8xy + 20x + 10y + 25 = 0$

B. $3x^2 - 3y^2 + 8xy - 20x - 10y + 25 = 0$

C. $3x^2 - 3y^2 + 8xy + 10x + 15y + 20 = 0$

D. $3x^2 - 3y^2 - 8xy - 10x - 15y - 20 = 0$

Answer: B

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8. If the gradient of one of the lines $x^2 + hxy + 2y^2 = 0$ twice that of the other , then sum of possible values of h _____.

A. ± 2

B. ± 3

C. ± 1

D. $\pm 3/2$

Answer: B

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9. The set of value of h for which the equation $4x^2 + hxy - 3y^2 = 0$ represents a pair of real and distinct lines is

A. R

B. $(3, 4)$

C. $(-3, 4)$

D. $(4, \infty)$

Answer: A

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10. If one of the lines of $my^2 + (1 - m^2)xy - mx^2 = 0$ is a bisector of the angle between the lines $xy = 0$, then m is 1 (b) 2 (c) $-\frac{1}{2}$ (d) -1

A. 1

B. 2

C. $-1/2$

D. -2

Answer: A

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11. If one of the lines of the pair $ax^2 + 2hxy + by^2 = 0$ bisects the angle between the positive direction of the axes. Then find the relation for a, b and h.

A. $a + b = 2|h|$

B. $a + b = -2h$

C. $a - b = 2|h|$

D. $(a - b)^2 = 4h^2$

Answer: B

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12. The equation $kx^2 + 4xy + 5y^2 = 0$ represents two lines inclined at an angle π if k is

A. $5/4$

B. $4/5$

C. -45

D. none of these

Answer: B

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13. If the equation $x^2 + (\lambda + \mu)xy + \lambda u y^2 + x + \mu y = 0$ represents two parallel straight lines, then prove that $\lambda = \mu$.

A. $\lambda \mid \mu = 0$

B. $\lambda = 4\mu$

C. $\lambda - \mu$

D. none of these

Answer: C

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14. If the gradient one of the lines $ax^2 + 2hxy + by^2 = 0$ is twice that of the other, then h^2=_____`

A. $h^2 = ab$

B. $h = a + b$

C. $8h^2 = 9ab$

D. $9h^2 = 8ab$

Answer: C

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15. The equation $x^3 + y^3 = 0$ represents

A. three real straight lines

B. three points

C. the combined euation of a straight line and a circle

D. none of these

Answer: D

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16. One bisector of the angle between the lines given by $a(x-1)^2 + 2h(x-1)y + by^2 = 0$ is $2x + y - 2 = 0$. The equation of the other bisector is

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

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

C. $x - 2y - 1 = 0$

D. none of these

Answer: C

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17. The equation $2x^2 - 3xy - py^2 + x + qy - 1 = 0$ represent two mutually perpendicular lines if

A. $p = 3, q = 2$

B. $p = 2, q = 3$

C. $p = -2, q = 3$

D. $p = 2, q = -9/2.$

Answer: B::D

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18. The product of the perpendiculars drawn from the point (1,2) to the pair of lines $x^2 + 4xy + y^2 = 0$ is

A. $9/4$

B. $3/4$

C. $9/16$

D. none of these

Answer: D

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19. The three lines whose combined equation is $y^3 - 4x^2y = 0$ form a triangle which is

A. isosceles

B. equilateral

C. right angled

D. none of these

Answer: D

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20. The angle between the pair of lines whose equation is $4x^2 + 10xy + my^2 + 5x + 10y = 0$is

A. $\tan^{-1}.\ \frac{3}{8}$

B. $\tan^{-1}.\ \frac{3}{4}$

C. $\tan^{-1}.\ \left(\frac{2\sqrt{25-4m}}{m+4}\right), m \in R$

D. none of these

Answer: B

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21. Show that the condition that two of the three lines represented by $ax^3 + bx^2y + cxy^2 + dy^3 = 0$ may be at right angles is $a^2 + ac + bd + d^2 = 0$.

A. $a^2 + ac + bd - d^2 = 0$

B. $a^2 + ac - bd + d^2 = 0$

C. $a^2 - ac + bd + d^2 = 0$

D. $a^2 + ac + bd + d^2 = 0$

Answer: D

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22. The orthocentre of the triangle formed by the pair of lines $2x^2 - xy - y^2 + x + 2y - 1 = 0$ and the line $x + y + 1 = 0$, is

A. $(-1, 0)$

B. $(0, 1)$

C. $(-1, 1)$

D. none of these

Answer: A

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23. If the distance of a point (x_1, y_1) from each of the two straight lines, which pass through the origin of coordinates, is δ, then the two lines are given by

A. $(x_1 y - x y_1)^2 = \delta^2 (x^2 + y^2)$

B. $(x_1 y + x u_1)^2 = \delta^2 (x^2 + y^2)$

C. $(x_1y - xy_1)^2 = \delta^2(x^2 - y^2)$

D. none of these

Answer: A

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24. The equation of two straight lines through the point (x_1, y_1) and perpendicular to the lines given by $ax^2 + 2hxy + by^2 = 0$, is

A. $b(x - x_1)^2 - 2h(x - x_1)(y - y_1) + a(y - y_1)^2 = 0$

B. $b(x - x_1)^2 + 2h(x - x_1)(y - y_1) + a(y - y_1)^2 = 0$

C. $a(x - x_1)^2 - 2h(x - x_1)(y - y_1) + b(y - y_1)^2 = 0$

D. none of these

Answer: A

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25. The equation of the straigh lines through the point (x_1, y_1) and parallel to the lines given by $ax^2 + 2xy + ay^2 = 0$, is

A. $a(y - y_1)^2 + 2h(x - x_1)(y - y_1) + b(x - x_1)^2 = 0$

B. $a(y - y_1)^2 - 2h(x - x_1)(y - y_1) + b(x - x_1)^2 = 0$

C. $b(y - y_1)^2 + 2h(x - x_1)(y - y_1) + a(x - x_1)^2 = 0$

D. none of these

Answer: C

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26. The triangle formed by the lines whose combined equation is $\left(y^2-4xy-x^2\right)(x+y-1)=0$ is

A. equilateral

B. right angled

C. isosceles

D. obtuse angled

Answer: B

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27. Find the combined equation of the pair of lines through the point (1, 0) and parallel to the lines represented by $2x^2-xy-y^2=0$

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

B. $2y^2 + xy - x^2 + 2x - y - 1 = 0$

C. $2y^2 + xy - x^2 - x - xy + 2 = 0$

D. none of these

Answer: B

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28. The equation $x^3 + ax^2y + bxy^2 + y^3 = 0$ represents three straight lines, two of which are perpendicular, then the equation of the third line, is

A. $y = ax$

B. $y = bx$

C. $y = x$

D. $y = -x$

Answer: C

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29. The combined equation of the lines L_1 and L_2 is $2x^2 + 6xy + y^2 = 0$ and that lines L_3 and L_4 is $4x^2 + 18xy + y^2 = 0$. If the angle between L_1 and L_4 be α, then the angle between L_2 and L_3 will be

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

B. 2α

C. $\frac{\pi}{4} + \alpha$

D. α

Answer: D

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30. The lines represented by $x^2 + 2\lambda xy + 2y^2 = 0$ and the lines represented by $1 + \lambda_x^2 - 8xy + y^2 = 0$ are equally inclined, then

A. λ is any real number

B. $\lambda > 2$

C. $\lambda = \pm 2$

D. $\lambda < -2$

Answer: C

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31. Prove that the equation m $\left(x^3 - 3xy^2\right) + y^3 - 3x^2y = 0$ represents three straight lines equally inclined to each other.

A. they are equally inclined to one another

B. two of which are at right angles

C. two of which are coincident

D. none of these

Answer: A

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32. If the equation $x^4 + bx^3y + cx^2y^2 + dxy^3 + ey^4 = 0$ represent two pairs of perpendicular lines, then

A. $b + d = 1$ and $e = -1$

B. $b + d = 0$ and $e = -1$

C. $b + d = 0$ and $e = 1$

D. none of these

Answer: B

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33. The equation $x^3 + x^2y - xy^2 - y^3 = 0$ represents three straight lines passing through the origin such that

A. two of them are coincident and two of them are perpendicular

B. two of them are coincident but not two are perpendicular

C. two of them are perpendicular but no two are coincident

D. none of these

Answer: A

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34. If one of the lines of $my^2 + \left(1 - m^2\right)xy - mx^2 = 0$ is a bisector of the angle between the lines $xy = 0$, then m is

A. $1, \ -1$

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

C. $1, 2$

D. $-1, \ -\frac{1}{2}$

Answer: A

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35. The equation $x^2 - 3xy + \lambda y^2 + 3x - 5y + 2 = 0$ where λ is a real number, represents a pair of straight lines. If θ is the angle between the lines, then $\cos ec^2\theta =$

A. 9

B. 10

C. 15

D. 26

Answer: B

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36. If the line $y = mx$ bisects the angle between the lines $ax^2 + 2hxy + by^2 = 0$ then m is a root of the quadratic equation

A. $h\left(m^2 - 1\right) + m(b - 1) = 0$

B. $h\left(m^2 - 1\right) + m(a - b)$

C. $h\left(m^2 + 1\right) + m(a - b) = 0$

D. none of these

Answer: B

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37. Two pairs of straight lines have the equations $y^2 + xy - 12x^2 = 0$ and $ax^2 + 2hxy + by^2 = 0$. One line

will be common among them if

A. $-3(2h+3b)$

B. $8(h-2b)$

C. $2(b+h)$

D. $-3(b+h)$

Answer: A::B

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38. The point of intersection of the pair of straight lines given by $6x^2+5xy-4y^2+7x+13y-2=0$, is

A. $(1,1)$

B. $(1,-1)$

C. $(-1, 1)$

D. $(-1, -1)$

Answer: C

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39. The straight lines represented by $x^2 + mxy - 2y^2 + 3y - 1 = 0$ meet at (a) $\left(-\frac{1}{3}, \frac{2}{3}\right)$ (b) $\left(-\frac{1}{3}, -\frac{2}{3}\right)$(c) $\left(\frac{1}{3}, \frac{2}{3}\right)$ (d) none of these

A. $-1/3, 2/3$

B. $(-1/3, -2/3)$

C. $(1/3, 2/3)$

D. none of these

Answer: A::C

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40. The square of the distance between the origin and the point of intersection of the lines given by

$ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$, is

A. $\frac{c(a+b) + f^2 + g^2}{ab - h^2}$

B. $\frac{c(a+b) - f^2 - g^2}{h^2 - ab}$

C. $\frac{c(a+b) - f^2 - g^2}{ab - h^2}$

D. none of these

Answer: C

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41. The centroid of the triangle whose three sides are given by the combined equation $\left(x^2+7xy+2y^2\right)(y-1)=0$, is

A. $(2/3, 0)$

B. $(7/3, 2/3)$

C. $(-7/3, 2/3)$

D. none of these

Answer: C

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42. If first degree terms and constant term are to be removed from the equation $12x^2+7xy-12y^2-17x-31y-7=0$, then the origin must be shifted at shifted at the point .

A. $(1, -1)$

B. $(-1, 1)$

C. $(-1, -1)$

D. none of these

Answer: A

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43. The combined equation of three sides of a triangle is $(x^2 - y^2)(2x + 3y - 6) = 0$. If $(-2, a)$ is an interior point and $(b, 1)$ is an exterior point of the triangle, then `2

A. $a \in (2, 10/3)$

B. $a \in (2, 10/3)$

C. $b \in (-1, 9/2)$

D. $b \in (-1/1)$

Answer: A::D

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44. Find the angle between the straight lines joining the origin to the point of intersection of $3x^2 + 5xy - 3y^2 + 2x + 3y = 0$ and $3x - 2y = 1$

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

B. $\frac{\pi}{4}$

C. $\frac{\pi}{6}$

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

Answer: D

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45. Show that all chords of the curve $3x^2 - y^2 - 2x + 4y = 0,$ which subtend a right angle at the origin, pass through a fixed point. Find the coordinates of the point.

A. $(1, 2)$

B. $(-1, 2)$

C. $(1, -2)$

D. $(-1, -2)$

Answer: C

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46. If the pair of lines $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ intersect on Y-axis , then

A. $2fgh = bg^2 + ch^2$

B. $bg^2 + ch^2 = fgh$

C. $abc = 2fgh$

D. none of these

Answer: A

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47. about to only mathematics

A. ± 2

B. $1, 2$

C. ± 1

D. none of these

Answer: C

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48. The straight lines represented by $(y - mx)^2 = a^2(1 + m^2)$ and $(y - nx)^2 = a^2(1 + n^2)$ from a rectangle (b) rhombus trapezium (d) none of these

A. ractangle

B. trapezium

C. rhombus

D. none of these

Answer: C

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49. The equation of the image of the pair of rays $y = |x|$ in the line mirror x = 1, is

A. $|y| = x + 2$

B. $|y| + 2 = x$

C. $y = |x - 2|$

D. none of these

Answer: C

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50. Two lines represented by the equation. $x^2 - y^2 - 2x + 1 = 0$ are rotated about the point $(1, 0)$, the line making the bigger angle with the position direction ofthe x-axis being turned by 45° in the clockwise sense and the other line being turned by 15° in the anti-clockwise sense. The combined equation of the pair of lines in their new position is

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

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

C. $\sqrt{3}x^2 - xy - 2\sqrt{3}x + \sqrt{3} = 0$

D. none of these

Answer: B

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51. The value of λ for which the lines joining the point of intersection of curves C_1 and C_2 to the origin are equally inclined to the axis of x.

$C_1 : \lambda x^2 + 3y^2 - 2\lambda xy + 9x = 0, C_2 : 3x^2 - 4y^2 + 8xy - 3x = 0$

A. $\lambda = \frac{4}{3}$

B. $\lambda = 12$

C. $\lambda = 1$

D. none of these

Answer: B

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52. If one of the lines given by the equation $2x^2 + pxy + 3y^2 = 0$ coincide with one of those given by $2x^2 + qxy - 3y^2 = 0$ and the other lines represented by them are perpendicular, then $p = 5$ (b) $p = -5$ $q = -1$ (d) $q = 1$

A. $a = -5, b = 1$

B. $a = 5, b = -1$

C. $a = 5, b = 1$

D. none of these

Answer: C

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53. If the pair of lines $x^2 + 2xy + ay^2 = 0$ and $ax^2 + 2xy + y^2 = 0$ have exactly one line in common, then a =

A. 1

B. -3

C. -1

D. 3

Answer: B

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54. If one of the lines given by $6x^2 - xy + 4cy^2 = 0$ is $3x + 4y = 0$, then c =

A. -3

B. -1

C. 3

D. 1

Answer: A

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55. Area of the triangle formed by the line $x + y = 3$ and angle bisectors of the pair of straight lines $x^2 - y^2 + 2y = 1$ is $2sq\grave{u}nits$ b. $4sq\grave{u}nits$ c. $6sq\grave{u}nits$ d. $8sq\grave{u}nits$

A. 2 sq. units

B. 4 sq. units

C. 6 sq. units

D. 8 sq. units

Answer: A

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56. If the pair of lines $ax^2 + 2hxy + by^2 = 0\left(h^2 > ab\right)$ forms an equilateral triangle with the line $lx + my + n = 0$ then $(a + 3b)(3a + b) =$

A. H^2

B. $-H^2$

C. $2H^2$

D. $4H^2$

Answer: D

Watch Video Solution

57. The area (in square units) of the quadrilateral formed by two pairs of lines $l^2x^2 - m^2y^2 - n(lx + my) = 0$ and $l^2x^2 - m^2y^2 + n(lx - my) = 0$, is

A. $\frac{n^2}{2|lm|}$

B. $\frac{n^2}{|m|}$

C. $\frac{n}{2|lm|}$

D. $\frac{n^2}{4|lm|}$

Answer: A

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58. The equation $4x^2 - 24xy + 11y^2 = 0$ represents

A. two parallel lines

B. two perpendicular lines

C. two lines through the origin

D. a circle

Answer: C

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59. If the pair of lines $ax^2 + 2(a+b)xy + by^2 = 0$ lie long diameters of a circle and divide the circle into four sectots such that the area of one of the sector is thirce the area of the another sector , then

A. $3a^2 + 2ab + 3b^2 = 0$

B. $3a^2 + 10ab + 3b^2 = 0$

C. $3a^2 - 2ab + 3b^2 = 0$

D. $3a^2 - 10ab + 3b = 0$

Answer: A

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60. If the equation of the pair of straight lines passing through the point $(1, 1)$, one making an angle θ with the positive direction of the x-axis and the other making the same angle with the positive direction of the y-axis, is $x^2 - (a+2)xy + y^2 + a(x + y - 1) = 0, a \neq 2,$ then the value of $\sin 2\theta$ is $a - 2$ (b) $a + 2$ $2(a + 2)$ (d) $\frac{2}{a}$

A. $a - 2$

B. $a + 2$

C. $\frac{2}{a+2}$

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

Answer: C

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61. If θ_1 and θ_2 are the angles made by the lines $\left(x^2 + y^2\right)\left(\cos^2\theta \sin^2\theta + \sin^2\theta\right) = (x\tan\alpha - y\sin\theta)^2$ with positive axis of x in the anti-clock wise direction, if $\theta = \frac{\pi}{6}$, $\tan\theta_1 + \tan\theta_2$ equals

A. $-\frac{8}{3}\sin^2\alpha$

B. $-\frac{8}{2}\text{cosec}\, 2\alpha$

C. $-8\sqrt{3}\text{cosec } 2\alpha$

D. $-4\sec 2\alpha$

Answer: B

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62. If the product of the perpendiculars drawn from the point (1,1) on the lines $ax^2 + 2hxy + by^2 = 0$ is 1, then

A. $h(a-b) + ab = 0$

B. $h(a+b) - ab = 0$

C. $h(a+b) + ab = 0$

D. $h(a-b) - ab = 0$

Answer: C

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63. If the equation $2x^2 + 2hxy + 6y^2 - 4x + 5y - 6 = 0$ represents a pair of straight lines, then the length of intercept on the x-axis cut by the lines is equal to

A. 2

B. 4

C. $\sqrt{7}$

D. 0

Answer: B

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1. If $ax^3 + by^3 + cx^2y + dxy^2 = 0$ represents three distinct straight lines, such that each line bisects the angle between the other two, then which of the following is/are correct.

A. $3b + c = 0$

B. $3a + d = 0$

C. $d + 3a = 0$

D. $b + 3c = 0$

Answer: A

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Section Ii Assertion Reason Type

1. Statement -1 : If $a > b > c$, then the lines represented by $(a-b)x^2 + (b-c)xy + (c-a)y^2 = 0$ are real and distinct.

Statement-2 : Pair of lines represented by $ax^2 + 2hxy + by^2 = 0$ are real and distinct if $h^2 > ab$.

A. Statement-1 is True, Statement-2 is True, Statement-2 is a correct explanation for Statement-1.

B. Statement-1 is True, Statement-2 is True, Statement-2 is not a correct explanation for Statement-1.

C. Statement-1 is True, Statement-2 is False.

D. Statement-1 is False, Statement-2 is True.

Answer: A

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2. Statement-1: All chords of the curve $3x^2 - y^2 - 2x + 4y = 0$ which subtend a right angle at the origin pass through a fixed point.

Statement-2: The equation $ax + by + c = 0$ represents a family of straight lines passing through a fixed point iff there is a linear relation between a, b and c.

A. Statement-1 is True, Statement-2 is True, Statement-2 is a correct explanation for Statement-1.

B. Statement-1 is True, Statement-2 is True, Statement-2 is not a correct explanation for Statement-1.

C. Statement-1 is True, Statement-2 is False.

D. Statement-1 is False, Statement-2 is True.

Answer: A


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3. Statement-1: If a, b are non-zero real number such that $a+b=2$, then $ax^2+2xy+by^2+2ax+2by=0$ represents a pair of straight lines. Statement-2: If a, b are of opposite signs, then $ax^2+2xt+by^2=0$ represents a pair of distinct lines passing through the origin.

A. Statement-1 is True, Statement-2 is True, Statement-2 is a correct explanation for Statement-1.

B. Statement-1 is True, Statement-2 is True, Statement-2 is not a correct explanation for Statement-1.

C. Statement-1 is True, Statement-2 is False.

D. Statement-1 is False, Statement-2 is True.

Answer: B

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Exercise

1. The value k for which $4x^2 + 8xy + ky^2 = 9$ is the equation of a pair of straight lines is_____

A. 0

B. 4

C. 9

D. -9

Answer: B

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2. The angle between the lines represented by $x^2 - y^2 = 0$ is

A. 0°

B. 45°

C. 90°

D. 180°

Answer: C

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3. If the angle between the two lines represented by $2x^2 + 5xy + 3y^2 + 6x + 7y + 4 = 0$ is $\tan^{-1}(m)$, then find the value of m.

A. |1/5|

B. -1

C. $-2/3$

D. none of these

Answer: A

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4. If one of the lines of $ax^2 + 2hxy + by^2 = 0$ bisects the angle between the axes, in the first quadrant, then

A. $h^2 - ab = 0$

B. $h^2 + ab = 0$

C. $(a+b)^2 = h^2$

D. $(a+b)^2 = 4h^2$

Answer: D

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5. The point of intersection of the two lines given by $2x^2 - 5xy + 2y^2 + 3x + 3y + 1 = 0$ is

A. $(1/2, 1/3)$

B. $(-1/7, -1/7)$

C. $(-1/3, 1/3)$

D. none of these

Answer: D

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6. Find the value of a for which the lines represented by $ax^2 + 5xy + 2y^2 = 0$ are mutually perpendicular.

A. 2

B. -2

C. $\frac{25}{8}$

D. none of these

Answer: B

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7. The equation of the diagonal of the square formed by the pairs of lines $xy + 4x - 3y - 12 = 0$ and $xy - 3x + 4y - 12 = 0$ is

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

B. $x^2 - y^2 + x + y = 0$

C. $x^2 + 2xy + y^2 + x + y = 0$

D. $x^2 - 2xy + y^2 + x - y = 0$

Answer: A

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8. Which of the following pair of straight lines intersect at right angles ?

A. $2x^2 = y(x + 2y)$

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

C. $2y(x + y) = xy$

D. $y = \pm 2x$

Answer: A

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9. The equation of the lines parallel to the line common to the pair of lines given by $6x^2 - xy - 12y^2 = 0$ and $15x^2 + 14xy - 8y^2 = 0$ and the sum of whose intercepts on the axes is 7, is

A. $2x - 3y = 42$

B. $3x + 4y = 12$

C. $5x - 2y = 10$

D. none of these

Answer: B

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10. Equation $x^2 + k_1 y^2 + 2k_2 y = a^2$ represents a pair of perpendicular straight lines if

A. $k_1 = -1$

B. $k_1 = 2k_2$

C. $2k_1 = k_2$

D. none of these

Answer: A

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11. If the equation $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ represents a pair of parallel lines, then

A. $\frac{a}{f} = \frac{b}{h} = \frac{f}{g}$

B. $\frac{a}{h} = \frac{h}{b} = \frac{f}{g}$

C. $\frac{a}{h} = \frac{h}{b} = \frac{g}{f}$

D. none of these

Answer: C

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12. If the slope of one of the lines given by $ax^2 - 6xy + y^2 = 0$ is twice the other, then a =

A. 1

B. 2

C. 4

D. 8

Answer: D

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13. If the equation $12x^2 + 7xy - py^2 - 18x + qy + 6 = 0$ represents a pair of perpendicular straight lines, then

A. $p = 12, q = 1$

B. $p = 1, q = 12$

C. $p = -1, q = 12$

D. $p = 1, q = -12$

Answer: A

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14. If θ is the angle between the lines given by the equation $6x^2 + 5xy - 4y^2 + 7x + 13y - 3 = 0$, then find the equation of the line passing through the point of intersection of these lines and making an angle θ with the positive x-axis.

A. $2x + 11y + 13 = 0$

B. $11x - 2y + 13 = 0$

C. $2x - 11y + 2 = 0$

D. $11x + 2y - 11 = 0$

Answer: B

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15. If the pair of straight lines $ax^2 + 2hxy + by^2 = 0$ is rotated about the origin through 90^0 , then find the equations in the new position.

A. $ax^2 - 2hxy + by^2 = 0$

B. $ax^2 - 2hxy - by^2 = 0$

C. $bx^2 - 2hxy + ay^2 = 0$

D. $bx^2 + 2hxy + ay^2 = 0$

Answer: C

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16. If the lines represented by $x^2 - 2pxy - y^2 = 0$ are rotated about the origin through an angle θ, one clockwise direction and other in anti-clockwise direction, then the equation of the bisectors of the angle between the lines in the new position is

A. px^2 +2xy-py^2 = 0

B. px^2+2xy+py^2=0

C. x^2-2pxy+y^2=0

D. None of these

Answer: A

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17. The difference of the tangents of the angles which the lines $x^2\left(\sec^2 - \sin^2\theta\right) - 2xy\tan\theta + y^2\sin^2\theta = 0$ make with X-axis, is

A. $2\tan\theta$

B. 2

C. $2\cot\theta$

D. $\sin 2\theta$

Answer: B

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18. If the two pairs of line $x^2 - 2mxy - y^2 = 0$ and $x^2 - 2nxy - y^2 = 0$ are such that

one of them represent the bisector of the angles between the other, then: (A) mn + 1 = 0 (B) mn - 1 = 0 (C) 1/m + 1/n = 0 (D) 1/m -1/n = 0

A. $mn + 1 = 0$

B. $mn - 1 = 0$

C. $\frac{1}{m} + \frac{1}{n} = 0$

D. $\frac{1}{m} - \frac{1}{n} = 0$

Answer: A

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19. Consider the equation of a pair of straight lines as $\lambda^2 - 10xy + 12y^2 + 5x - 16y - 3 = 0.$

The value of λ is

A. 4

B. 3

C. 2

D. 1

Answer: C

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20. The equation $y^2 - x^2 + 2x - 1 = 0$, represents

A. a pair of st. lines

B. a circle

C. a parabola

D. an ellipse

Answer: A

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21. The angle between the straight lines $x^2 - y^2 - 2x - 1 = 0$, is

A. 90°

B. 60°

C. 75°

D. 36°

Answer: A

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22. If the angle between the two lines represented by $2x^2 + 5xy + 3y^2 + 6x + 7y + 4 = 0$ is $\tan^{-1}(m)$, then find the value of m.

A. $1/5$

B. 1

C. $7/5$

D. 7

Answer: A

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23. The diagonal of the rectangle formed by the lines $x^2 - 7x + 6 = 0$ and $y^2 - 14y + 40 = 0$ is

A. $5x + 6y = 0$

B. $5x - 6y = 0$

C. $6x - 5y + 14 = 0$

D. $6x - 5y - 14 = 0$

Answer: C

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24. The angle between the pair of straight lines $2x^2 + 5xy + 2y^2 + 3x + 3y + 1 = 0$ is

(A) $\cos^{-1}\left(\frac{4}{5}\right)$

(A) $\tan^{-1}\left(\frac{4}{5}\right)$

(A) $\frac{\pi}{2}$

(D) 0

A. $\cos^{-1}(4/5)$

B. $\tan^{-1}(4/5)$

C. 0

D. $\pi/2$

Answer: A

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25. The circumcentre of the triangle formed by the lines, $xy + 2x + 2y + 4 = 0$ and $x + y + 2 = 0$ is-

A. $(0, 0)$

B. $(-2, -2)$

C. $(-1, -1)$

D. $(-1, -2)$

Answer: C

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26. Distance between the lines represented by $9x^2 - 6xy + y^2 + 18x - 6y + 8 = 0$, is $\frac{1}{\sqrt{10}}$ 2. $\frac{2}{\sqrt{10}}$ 3. $\frac{4}{\sqrt{10}}$ 4. $\sqrt{10}$ 5. $\frac{2}{\sqrt{5}}$

A. $\frac{1}{\sqrt{10}}$

B. $\frac{2}{\sqrt{10}}$

C. $\frac{4}{\sqrt{10}}$

D. $\sqrt{10}$

Answer: B

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27. The joint equation of the straight lines $x + y = 1$ and $x - y = 4$, is

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

B. $x^2 - y^2 = 4$

C. $(x + y - 1)(x - y - 4) = 0$

D. $(x + y + 1)(x - y + 4) = 0$

Answer: C

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28. If the slope of one of the lines given by $ax^2 - 6xy + y^2 = 0$ is square of the other, then a =

A. $8, -27$

B. $-8, 27$

C. $1, 8$

D. $-8, -27$

Answer: A

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29. The value of k such that

$3x^2 - 11xy + 10y^2 - 7x + 13y + k = 0$

may represent a pair of straight lines , is

A. 3

B. 4

C. 6

D. 8

Answer: B

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30. If $x^2 - kxy + y^2 + 2y + 2 = 0$ denotes a pair of straight lines then k =

A. 2

B. $1/\sqrt{2}$

C. $2\sqrt{2}$

D. $\sqrt{2}$

Answer: D

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31. The equations of a line which is parallel to the line common to the pair of lines given by $6x^2 - xy - 12y^2 = 0$ and $15x^2 + 14xy - 8y^2 = 0$and at a distance of 7 units from it is :

A. $3x + 4y = \pm 35$

B. $5x - 2y = \pm 7$

C. $2x - 3y = \pm 7$

D. none of these

Answer: A

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32. If the slope of one of the lines given by $36x^2 + 2hxy + 72y^2 = 0$ is four times the other, then $h^2 =$

A. 5040

B. 4050

C. 8100

D. none of these

Answer: B

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33. The combined equation of the pair of the straight lines through the point (1, 0) and parallel to thelines represented by $2x^2 - xy - y^2 = 0$ is

A. $2x^2 - xy - 2y^2 + 4x - y = 6$

B. $2x^2 - xy - y^2 - 4x + y + 2 = 0$

C. $2x^2 - xy - y^2 - 4x - y + 2 = 0$

D. none of these

Answer: C

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34. The equation $x^3 - 6x^2y + 11xy^2 - 6y^3 = 0$ represents three straight lines passing through the origin, the slopes of which form an

A. A.P.

B. G.P.

C. H.P.

D. none of these

Answer: C

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Chapter Test

1. If the lines given by $ax^2 + 2hxy + by^2 = 0$ are equally inclined to the lines given by $ax^2 + 2hxy + by^2 + \lambda(x^2 + y^2) = 0$, then

A. λ is any real number

B. $\lambda = 2$

C. $\lambda = 1$

D. none of these

Answer: A

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2. The equation to the striaght lines passing through the origin and making an angle α with straight line $y + x = 0$ are given by

A. $x^2 + 2xy \sec 2\alpha + y^2 = 0$

B. $x^2 - 2xy \sec 2\alpha + y^2 = 0$

C. $x^2 + 2xy \cos 2\alpha + y^2 = 0$

D. none of these

Answer: A

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3. Prove that the limiting points of the system $x^2 + y^2 + 2gx + c + \lambda(x^2 + y^2 + 2fx + k) = 0$ subtend a right angle at the origin, if $\frac{c}{g^2} + \frac{k}{f^2} = 2$.

A. $g^2 + f^2 = c$

B. $g^2 - f^2 = c$

C. $g^2 - f^2 = 2c$

D. $g^2 + f^2 = c^2$

Answer: C

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4. If the area of the triangle formed by the pair of lines $8x^2 - 6xy + y^2 = 0$ and the line $2x + 3y = a$ is 7 then $a =$

A. 14

B. $14\sqrt{2}$

C. 28

D. none of these

Answer: C

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5. The equation to the pair of straight lines bisecting the angles between the straight line

$ax^2 + 2hxy + by^2 = 0$

A. $(a-b)(x^2-y^2) - 4xy = 0$

B. $(a-b)(x^2+y^2) + 4hxy = 0$

C. $(a-b)(x^2-y^2) + 4xy = 0$

D. none of these

Answer: C

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6. If the pair of lines $\sqrt{3}x^2 - 4xy + \sqrt{3}y^2 = 0$ is rotated about the origin by $\frac{\pi}{6}$ in the anticlockwise sense, then find the

equation of the pair in the new position.

A. $\sqrt{3}x^2 - xy = 0$

B. $x^2 - \sqrt{3}xy = 0$

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

D. none of these

Answer: A

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7. Show that if two of the lines $ax^3 + bx^2y + cxy^2 + dy^3 = 0(a \neq 0)$ make complementary angles with X -axis in anti -clockwise sense, then a(a-c)+d(b-d)=0 .

A. $(a-c)=d(b-d)$

B. $d(a-c)=a(d-b)$

C. $a(a-c)=d(d-b)$

D. none of these

Answer: C

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8. If the pairs of straight lines $ax^2+2hxy-ay^2=0$ and $bx^2+2gxy-by^2=0$ be such that each bisects the angles between the other , then prove that hg+abd=0.

A. one pair bisects the angle between the other pair

B. the lines of one pair are equally inclined to the lines of the other pair

C. the lines of each pair are perpendicular to other pair

D. all of these

Answer: D

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9. The equation $a^2x^2 + 2h(a+b)xy + b^2y^2 = 0$ and $ax^2 + 2hxy + by^2 = 0$ represent two pairs of perpendicular straight lines two pairs of parallel straight lines two pairs of straight lines which are equally inclined to each other none of these

A. two pairs of perpendicular straight lines

B. two pairs of parallel straight lines

C. two pairs of straight lines which are equally inclined to each other

D. none of these

Answer: C

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10. If $\frac{x^2}{a}+\frac{y^2}{b}+\frac{2xy}{h}=0$ represent pair of straight lines and slope of one line is twice the other, then $ab:h^2$ is :

A. $9:8$

B. $8:9$

C. $1:2$

D. $2:1$

Answer: A

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11. If the lines represented by the equation $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ are equidistant from the origin, then

A. $f^4 - g^4 = c(bf^2 - ag^2)$

B. $f^4 - g^4 = c(af^2 - bg^2)$

C. $f^4 - g^4 = c(ag^2 - bf^2)$

D. none of these

Answer: A

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12. The distance between the two lines represented by the sides of an equilateral triangle a right-angled triangle an isosceles triangle

A. $8/5$

B. $6/5$

C. $11/5$

D. none of these

Answer: A

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13. The equation of the image of the lines $y = |x|$ in the line mirror x = 2 is

A. $y = |x - 4|$

B. $|y| = x + 4$

C. $|y| + 4 = x$

D. none of these

Answer: A

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14. If the equation $3x^2 + xy - y^2 - 3x + 6y + k = 0$ represents a pair of straight lines, then the value of k, is

A. 9

B. 1

C. -9

D. 0

Answer: C

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15. The equation of second degree $x^2 + 2\sqrt{2}xy + 2y^2 + 4x + 4\sqrt{2}y + 1 = 0$ represents a pair of straight lines.The distance between them is

A. 4

B. $2\sqrt{3}$

C. $4\sqrt{3}$

D. 2

Answer: D

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16. The value of λ for which the equation $x^2 - y^2 - x - \lambda y - 2 = 0$ represent a pair of straight line, are

A. $-3, 1$

B. $3, \ -3$

C. $-1, 1$

D. $3, 1$

Answer: B

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17. Distance between the pair of lines represented by the equation $x^2 - 6xy + 9y^2 + 3x - 9y - 4 = 0$, is

A. $\frac{15}{\sqrt{10}}$

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

C. $\sqrt{\frac{5}{2}}$

D. $\frac{1}{\sqrt{10}}$

Answer: C

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18. The equation $x^2 - 3xy + \lambda y^2 + 3x - 5y + 2 = 0$ where λ is a real number, represents a pair of straight lines. If θ is the angle between the lines, then $\cos ec^2\theta =$

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