MATHS

BOOKS - MARVEL MATHS (HINGLISH)

PAIR OF STRAIGHT LINES

Mcqs

1. Joint equation of co-ordinates axes, in a plane is

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

B. $x^2 + y^2 = 1$

C. $xy = 0$

D. $xy = x + y$

Answer: C

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2. Joint equation of two lines both parallel to X-axis, and each at a distance of 2 units from it is

A. $x^2 - 4 = 0$

B. $y^2 - 4 = 0$

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

D. $y^2 + 4 = 0$

Answer: B

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3. Joint equation of two lines both parallel to Y-axis and each at a distance of 3 units from it is

A. $x^2 - 9 = 0$

B. $y^2 - 9 = 0$

C. $x^2 - y^2 = 9$

D. $y^2 + 9 = 0$

Answer: A

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4. Joint equation of two lines, through the origin, having slopes 2 and -2 is

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

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

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

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

Answer: B

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5. Joint equation of two lines, through the origin, having slopes $\sqrt{3}$ and $\frac{-1}{\sqrt{3}}$ is

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

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

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

D. $\sqrt{3}(x^2 + y^2) + 2xy = 0$

Answer: A

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6. Joint equation of two lines, through the origin, such that one of them is parallel and the other perpendicular to line $2x + 3y + c = 0$ is

A. $6x^2 - 5xy - 6y^2 = 0$

B. $6x^2 - 5xy + 6y^2 = 0$

C. $6x^2 + 5xy - 6y^2 = 0$

D. $6x^2 + 5xy + 6y^2 = 0$

Answer: C

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7. Joint equation of two lines through the origin, such that one is parallel to line $x + 2y = 5$ and the other perpendicular to line $2x - y + 3 = 0$ is

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

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

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

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

Answer: D

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8. Joint equation of lines bisecting angles between co-oridnates axes is

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

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

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

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

Answer: B

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9. Joint equation of lines, trisecting angles in first and third quadant is

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

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

C. $\sqrt{3}(x^2 + y^2) + 4xy = 0$

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

Answer: D

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10. Joint equation of lines, trisecting angles is second and fourth quadrant is

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

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

C. $\sqrt{3}\left(x^2+y^2\right)+4xy=0$

D. $4\left(x^2+y^2\right)+\sqrt{3}xy=0$

Answer: C

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11. Joint equation of two lines, through the origin, each making an angle of 30° with the X-axis is

A. $x^2 - 3y^2 = 0$

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

C. $2x^2 - 3y^2 = 0$

D. $3x^2 - y^2 = 1$

Answer: A

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12. Joint equation of two lines, through the origin, each making an angle of 30° with the Y-axis is

A. $x^2 - 3y^2 = 0$

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

C. $2x^2 - 3y^2 = 0$

D. $x^2 + 3y^2 = 1$

Answer: B

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13. If two lines $ax^2 + 2hxy + by^2 = 0$ make equal angles with a co-ordinate axis, then

A. $h = 0$ and $ab > 0$

B. $h \neq 0$ and $ab < 0$

C. $h \neq -0$ and $ab > 0$

D. $h = 0$ and $ab < 0$

Answer: D

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14. If two lines $ax^2 + 2hxy + by^2 = 0$ are equally inclined with co-ordinate axes, then

A. $h = 0$ and $ab < 0$

B. $a = b$

C. $a = \pm b$

D. $a^2 + b^2 = 0$

Answer: C

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15. If pairs of opposite sides of a quadrilateral are $x^2 - 7x + 6 = 0$ and $y^2 - 14y + 40 = 0$ then equations of its diagonals are

A. $6x + 5y = 56, 5x + 6y = 14$

B. $6x + 5y = 56, 5y - 6x = 14$

C. $6x - 5y = 56, 6x + 5y = 14$

D. $6x - 5y = 56, 6x - 5y = 14$

Answer: B

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16. Separate equations of lines, whose combined equation is $4x^2 - y^2 + 2x + y = 0$ are

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

B. $2x - y = 0, 2x + y + 1 = 0$

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

D. $2x - y + 1 = 0, x - 2y = 0$

Answer: A

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17. Lines jointly given by $x^2 - 9y^2 - x + 3y = 0$ intersect each other in the point

A. $\left(\frac{-1}{2}, \frac{1}{6}\right)$

B. $\left(\frac{1}{2}, \frac{-1}{6}\right)$

C. $\left(\frac{1}{2}, \frac{1}{6}\right)$

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

Answer: C

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18. Lines jointly given by $4x^2 - y^2 + 2x + y = 0$ meet each other in the point

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

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

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

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

Answer: C

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19. Lines whose combined equation is $xy + 3x - 2y - 6 = 0$ pass through the point

A. $(2, 3)$

B. $(-2, 3)$

C. $(2, -3)$

D. $(-2, -3)$

Answer: C

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20. Combined equation of pair of lines, through (1,2) and parallel to co-ordinate axes is

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

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

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

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

Answer: A

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21. Equation $(x + y - 1)^2 - 4x^2 = 0$ jointly represents two lines, drawn from the point

A. $(1, 0)$

B. $(0, 1)$

C. $(0, 0)$

D. $(1, 1)$

Answer: B

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22. Separate equations of lines jointly given by the equation $x^2 + 2xy\csc\alpha + y^2 = 0$ are

A. $x\cos\alpha + y(1 \pm \sin\alpha) = 0$

B. $x\sec\alpha + y(1 \pm \csc\alpha) = 0$

C. $x\tan\alpha + y(1 \pm \cot\alpha) = 0$

D. $x\sin\alpha + y(1 \pm \cos\alpha) = 0$

Answer: D

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23. Separate equations of lines jointly given by the equation $hxy + gx + \frac{fh}{g}hy + f = 0$ are

A. $x = \frac{-fh}{g}, y = \frac{-g}{h}$

B. $x = \frac{f}{g}, y = \frac{-g}{h}$

C. $x = \frac{-f}{h}, h = \frac{-g}{h}$

D. $fg = ch$

Answer: A

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24. Joint equation of lines, through the origin, making an equilateral triangle with line $x = 1$ is

A. $3x^2 - y^2 = 0$

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

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

D. $3x^2 + y^2 = 1$

Answer: B

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25. Joint equation of lines, through the origin, making an equalateral triangle with line $y = 2$ is

A. $3x^2 - y^2 = 0$

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

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

D. $x^2 + 3y^2 = 1$

Answer: A

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26. Combined equation of pair of lines, both passing through (1,0), and each makingk an angle of 30° with X-axis, is

A. $(x-1)^2 - 3y^2 = 0$

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

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

D. $3x(x-1)^2 - y^2 = 0$

Answer: A

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27. Combined equation of pair of lines, both passing through (0,1), and each making an angle of 60° with X-axis is

A. $x^2 - 3(y-1)^2 = 0$

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

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

D. $x^2 + 3y^2 = 0$

Answer: C

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28. 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.

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

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.

$$a(x - x_1) + 2h(x - x_1)(y - y_1) + b(y - y_2) = 0$$

Answer: C

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29. 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.

$$a(y_1-y_2)-2h(x-x_1)(y-y_1)+b(x-x_1)=0$$

Answer: B

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30. Joint equation of two lines through (2,-1) parallel to two lines $2x^2-3xy-9y^2=0$ is

A. $2x^2-3xy+9y^2-5x-24y-7=0$

B. $2x^2-3xy-9y^2-5x-24y-7=0$

C. $2x^2 + 3xy - 9y^2 - 5x - 24y - 7 = 0$

D. $2x^2 + 3xy - 9y^2 - 5x - 24y - 7 = 0$

Answer: C

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31. Joint equation of two lines through (2,-3) perpendicular to two lines $3x^2 + xy - 2y^2 = 0$ is

A. $2x^2 + xy - 3y^2 - 5x - 20y - 25 = 0$

B. $-2x^2 - xy + 3y^2 - 5x - 20y - 25 = 0$

C. $3x^2 + xy - 2y^2 - 5x - 20y - 25 = 0$

D. $2x^2 + xy - 3y^2 + 5x + 20y - 25 = 0$

Answer: A

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32. If line $4x - 3y = 0$ coincides with one of the lines $ax^2 + 2hxy + by^2 = 0$ then

A. $4a + 2h - 3b = 0$

B. $16a + 24h + 9b = 0$

C. $9a + 24h + 16 = 0$

D. $8a + h - 6b = 0$

Answer: C

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33. If one of the lines $2x^2 - xy + ky^2 = 0$ is $x - 3y = 0$ then $k =$

A. -1

B. 5

C. 15

D. -15

Answer: D

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34. If line $lx + my + n = 0$ is perpendicular to one of the lies $ax^2 + 2hxy + by^2 = 0$ then

A. $am^2 + 2lhm + bl^2 = 0$

B. $al^2 + 2lhm + bm^2 = 0$

C. $bm^2 - 2lhm + al^2 = 0$

D. $la^2 + 2hm + nb^2 = 0$

Answer: B

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35. If one of the lines $2x^2 - xy - 15y^2 = 0$ is perpendicular to line $kx + y = 0$ then $k =$

A. 1

B. 2

C. 3

D. 4

Answer: C

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36. If one of the lines $6x^2 + exy + y^2 = 0$ si $y + 2x = 0$ then $c =$

A. -3

B. -4

C. -5

D. 5

Answer: D

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37. If sum of slopes of lines $x^2 + kxy - 3y^2 = 0$ is twice product of slopes then $k =$

A. -1

B. -2

C. 1

D. 2

Answer: B

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38. If sum of slopes of lines $kx^2 - 10xy - 9y^2 = 0$ is live tme their product, then $k =$

A. 2

B. 1

C. -2

D. -1

Answer: A

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39. If slope of one of the lines $3x^2 + 4xy + \lambda y^2 = 0$ is thrice slope of the other line then $\lambda =$

A. 2

B. 1

C. -1

D. -2

Answer: B

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40. If slope of one of the lines $ax^2 + 2hxy + by^2 = 0$ is k times slope of the other, then $ab(1+k)^2 =$

A. $2kh^2$

B. $2k^2h$

C. $4k^2h$

D. $4kh^2$

Answer: D

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41. If slope of one of the lines $ax^2 - 2hxy + by^2 = 0$ is square of slope of the other then

A. $ab(a+b) + 6abh + 8h^3 = 0$

B. $-ab(a+b) - 6abh + 8h^3 = 0$

C. $ab(a+b) + 3abh + 4h^3 = 0$

D. $ab(a-b) + 6abh - 8h^3 = 0$

Answer: B

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42. If slopes of lines $3x^2 + khy - y^2 = 0$ differ by 4 then $k =$

A. -2

B. 2

C. ± 2

D. $\pm 2\sqrt{7}$

Answer: C

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43. The difference of the slopes of the lines $3x^2 - 4xy + y^2 = 0$ is

A. 1

B. 2

C. -2

D. 3

Answer: B

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44. Slopes of lines $6x^2 - xy - 2y^2 = 0$ differ by

A. 2

B. 7

C. $\frac{-2}{7}$

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

Answer: D

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45. Joint equation of two lines through the origin each making angle of 30° with line $x + y = 0$, is

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

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

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

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

Answer: B

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46. Joint equation of two lines through the origin each making angle of 60° with line $x - y = 0$, is

A. $x^2 - 4xy - y^2 = 0$

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

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

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

Answer: B

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47. Joint equation of two lines through the origin, each making angle of 45° with line $3x - y = 0$ is

A. $2x^2 - 3xy - 2y^2 = 0$

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

C. $2x^2 + 3xy - 2y^2 = 0$

D. $3x^2 + 2xy - 3y^2 = 0$

Answer: C

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48. Measure of angle between the lines $3xy - 4y = 0$ is

A. 30°

B. 60°

C. 90°

D. 120°

Answer: C

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49. Measure of angle between the lines $xy - 5x + 4y - 20 = 0$ is

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

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

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

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

Answer: D

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50. Measure of angle between lines $x^2 - 4xh + y^2 = 0$ is

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

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

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

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

Answer: B

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51. Measure of angle between lines $3x^2 - 8xy - 3y^2 = 0$ is

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

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

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

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

Answer: A

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52. Measure of angle between lines $x^2 + 2x \sec\alpha + y^2 = 0$ is

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

B. α

C. $\frac{\pi}{2} + \alpha$

D. $\pi - \alpha$

Answer: B

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53. Measurement of angle between lines $x^2 + 2xy\csc\alpha + y^2 = 0$ is

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

B. α

C. $\frac{\pi}{2} + \alpha$

D. $\pi - \alpha$

Answer: A

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54. Measure of angle bewtwen lines $\left(3+2\sqrt{3}\right)x^2-2xy-y^2=0$ is

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

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

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

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

Answer: C

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55. If equation $8x^2 - 3xy + \lambda y^2 = 0$ represents two mutually perpendicular lines, then $\lambda =$

A. 3

B. 8

C. -8

D. -3

Answer: C

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56. If acute angle between lines $x^2 - 2hxy + y^2 = 0$ is 60° then $h =$

A. -2

B. ± 2

C. 2

D. $\sqrt{3}$

Answer: B

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57. If lines $2x^2 + 8xy + ky^2 = 0$ are coincident then $k =$

A. 8

B. -8

C. 4

D. -4

Answer: A

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58. The lines $a^2x^2 + bcy^2 = a(b+c)xy$ will be coincident , if

A. $a = b$

B. $b = c$

C. $c = a$

D. $b^2 = ac$

Answer: B

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59. If the acute angle between the lines $ax^2 + 2hxy + by^2 = 0$ is 60°, then show that $(a + 3b)(3a + b) = 4h^2$.

A. h^2

B. $2h^2$

C. $3h^2$

D. $4h^2$

Answer: D

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60. If acute angle between lines $ax^2 + 2hxy + by^2 = 0$ is $\frac{\pi}{4}$, then $4h^2 =$

A. $a^2 + 4ab + b^2$

B. $a^2 + 6ab + b^2$

C. $(a + 2b)(a + 3b)$

D. $(a - 2b)(2a + b)$

Answer: B

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61. If acute angle between lines $ax^2 + 2hxy + by^2 = 0$ is $\frac{\pi}{6}$, then $a^2 + 14ab + b^2 =$

A. $4h^2$

B. $8h^2$

C. $12h^2$

D. $16h^2$

Answer: C

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62. If acute angle between lines $ax^2 + 2hxy + by^2 = 0$ is congruent to that between lines $2x^2 - 5xy + 3y^2 = 0$ and $k\left(h^2 - ab\right) = (a + b)^2$ then $k =$

A. $-(10)^2$

B. $(-10)^2$

C. -10

D. 10

Answer: B

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63. If acute angle between lines $ax^2 + 2hxy + by^2 = 0$ is congruent to that between lines $3x^2 - 7xy + 4y^2 = 0$ and $(a+b)^2 + k\left(h^2 - ab\right) = 0$ then $k =$

A. $-(14)^2$

B. $(-14)^2$

C. -14

D. 14

Answer: A

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64. If acute angle between lines $3x^2 - 4xy + by^2 = 0$ is $\cot^{-1} 2,$ then $b =$

A. $1, -55$

B. $-1, 55$

C. $15, -5$

D. $1, -54$

Answer: A

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65. If one of the lines denoted by the line pair $ax^2 + 2hxy + by^2 = 0$ bisects the angle between the coordinate axes, then prove that $(a+b)^2 = 4h^2$

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

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

C. $4ab = h^2$

D. $b^2 = 4ah$

Answer: B

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66. If slope of one of the lines $ax^2 + 2hxy + by^2 = 0$ is twice that of the other, then $h^2 : ab =$

A. $7 : 8$

B. $8 : 7$

C. $8 : 9$

D. $9 : 8$

Answer: D

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67. If ratio of slopes of lines $ax^2 + by^2 = 0$ is $1:3$ then $h^2 : ab =$

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

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

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

D. 1

Answer: C

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68. If the gradient of one of the lines given by $x^2 + hxy + 2y^2 = 0$ is twice that of the other, then h =

A. ± 2

B. ± 3

C. ± 1

D. $\pm \frac{3}{2}$

Answer: D

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69. If slopes of lines $ax^2 + 2hxy + by^2 = 0$ differ by k then $\left(h^2 - ab\right) : b^2 =$

A. $4k^2$

B. $4 : k^2$

C. $k^2 : 4$

D. $k^2 + 4$

Answer: C

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70. If distance of a point (x_1, y_1) from each of two lines L_1 and L_2, through the orign , is δ, then joint equation of L_1 and L_2 is

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

B. $(x_1y + xy_1)^2 = \delta^2(x^2 + y^2)$

C. $(x_1x - yy_1)^2 = \delta^2(x^2 + y^2)$

D. $(\mathrm{xx}_1 + \mathrm{yy}_1)^2 = \delta$

Answer: A

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71. 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. $(ax + by)^2 = d^2(x^2 + y^2)$

B. $(ay - bx)^2 = d^2(x^2 + y^2)$

C. $(ax + by)^2 = d^2(x^2 + y^2)$

D. $(ax + by)^2 = d^2(x^2 - y^2)$

Answer: B

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72. If $2x^2 + xy - 3y^2 + 4x + ky - 6 = 0$ represents a pair of lines then $k =$

A. $11, \ -9$

B. $9, \ -11$

C. $1, \ -19$

D. $-9, \ -11$

Answer: A

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73. If $\lambda x^2 - 10xy + 12y^2 + 5x - 16y - 3 = 0$, represents a pair of straight lines, then the value of λ is

A. 4

B. 3

C. 2

D. 1

Answer: C

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74. If $12x^2 - 10xy + 2y^2 + 11x - 5y + c = 0$ represents a pair of lines then $c =$

A. 1

B. 2

C. -1

D. -2

Answer: B

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75. If $2x^2 + 4xy - py^2 + 4x + qy + 1 = 0$ represents a pair of mutually perpendicular lines then

A. $p = 2, q = 1$

B. $p = -2, q = 0$

C. $p = -2, q = 8$

D. $p = 2, q = 0, 8$

Answer: D

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76. if the equation $12x^2 + 7xy - py^2 - 18x + qy + 6 = 0$ represents two perpendicular lines , then the value of p and q are

A. $(12, 1)$

B. $(1, 12)$

C. $(-1, 12)$

D. $(-12, 1)$

Answer: A

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

A. $\frac{1}{5}$

B. 1

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

D. 7

Answer: A

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78. If θ is the angle between the liens $x^2 - 3xy + 2y^2 + \lambda x - 5y + 2 = 0$ then $\csc^2\theta =$

A. 3

B. 9

C. 10

D. 100

Answer: C

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79. The equation

$$x^2 + 2\sqrt{ab}xy + by^2 + 2gx + 2fy + c = 0$$

represents a pair of parallel straight lines, if

A. $g^2 = ac$

B. $bg^2 = af^2$

C. $ag^2 = bf^2$

D. $af^2 = cg^2$

Answer: B

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80. Select and write the correct answer from the alternatives in each of the following :

If an equation hxy $+gx+fy+c=0$ represents a pair of lines, then .....

A. $2fgh=c^2$

B. $2fg=ch$

C. $fgh=c^2$

D. $fg=ch$

Answer: D

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81. If the two lines $ax^2 + 2hxy + by^2 = a$ make angles α and β with X-axis,then : $\tan(\alpha + \beta) =$

A. $\frac{h}{\alpha + b}$

B. $\frac{h}{a - b}$

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

D. $\frac{2h}{a - b}$

Answer: D

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82. If $3x^2 - 6xy - by^2 = 0$ represents a pair of lines inclined at an angle π then $b =$

A. 3

B. 6

C. 9

D. any real number

Answer: A

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83. Find the angle between the lines whose joint equation is $2x^2 - 3xy + y^2 = 0$

A. $\tan^{-1}(\sqrt{3})$

B. $\cot^{-1}(\sqrt{3})$

C. $\cot^{-1}(3)$

D. $\cos^{-1}(3)$

Answer: C

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84. If the lines $px^2 - qxy - y^2 = 0$ make the angles α and β with X-axis, then find the value of $\tan(\alpha + \beta)$.

A. $\frac{-p}{1+q}$

B. $\frac{-q}{1+p}$

C. $\frac{q}{1+p}$

D. $\frac{p}{1+q}$

Answer: B

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85. If the equation $ax^2 + by^2 + cx + cy = 0$ represents a pair of straight lines , then

A. $a + b = 0$

B. $b + c = 0$

C. $c + a = 0$

D. $a + b = c$

Answer: A

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86. If the equation $ax^2 + by^2 + cx + cy = 0$ represents a pair of straight lines , then

A. not real

B. coincident

C. mutually perpendiculat

D. strictly parallel

Answer: C

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87. For what value of k is $4x^2 + 8xy + ky^2 = 0$ the equation of a pair of straight lines?

A. 0

B. 4

C. 9

D. -9

Answer: B

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88. Two lines are given by $(x-2y)^2+k(x-2y)=0$. The value of k, so that the distance between them is 3, is :

A. ± 3

B. $\pm 5\sqrt{5}$

C. 0

D. $\pm 3\sqrt{5}$

Answer: D

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89. Find the measure of the acute angle between the lines represented by $(a^2 - 3b^2)x^2 + 8abxy + (b^2 - 3a^2)y^2 = 0.$

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

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

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

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

Answer: C

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90. If joint equation of two lines through the origin, each making an angle θ with the line $x + y = 0$ is $x^2 + 2hxy + y^2 = 0$ then $h =$

A. $\sec 2\theta$

B. $-\sec 2\theta$

C. $\tan 2\theta$

D. $-\tan 2\theta$

Answer: A

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91. IF the equation $x^2 + y^2 + 2gx + 2fy + 1 = 0$ represents a pair of lines, then

A. $g^2 + f^2 = \frac{1}{2}$

B. $f^2 - g^2 = 1$

C. $f^2 = g^2 = 1$

D. $g^2 - f^2 = 0$

Answer: C

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92. Equation of pair of lines, drawn through (1,1) parallel to the lines $2x^2 - 5xy + 3y^2 =$ is

A. $3x^2 + 5xy + 2y^2 - 9x - 11y + 10 = 0$

B. $3x^2 + 5xy + 2y^2 - 11x - 9y + 10 = 0$

C. $2x^2 + 5xy + 3y^2 - 9x - 11y + 10 = 0$

D. $2x^2 + 5xy = 3y^2 - 11x - 9x + 10 = 0$

Answer: C

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

A. ab

B. $2ab$

C. $7ab$

D. $9ab$

Answer: D

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94. 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. 4

B. -6

C. 6

D. -4

Answer: C

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95. If $h^2 = ab$ then slopes of lines $ax^2 + 2hxy + by^2 = 0$ are in the ratio

A. $1:2$

B. $2:1$

C. $2:3$

D. $1:1$

Answer: D

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96. Joint equation of two lines through (-2,3) parallel to bisectors of angles between co-ordinate axes is

A. $x^2 + y^2 + 4x + 6y - 5 = 0$

B. $x^2 - y^2 + 4x + 6y - 5 = 0$

C. $x^2 - y^2 - 4x - 6y + 5 = 0$

D. $x^2 - y^2 - 4x - 6y - 5 = 0$

Answer: B

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97. If angle between lines $ax^2 + 2hxy + by^2 = 0$ is $\frac{\pi}{4}$ then $2h =$

A. $\sqrt{a^2 + b^2 + 3ab}$

B. $\sqrt{a^2 + b^2 - 3ab}$

C. $\sqrt{(a+b)^2 + 4ab}$

D. $\sqrt{(a+b)^2 + ab}$

Answer: C

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98. The lines represented by the equation $ax^2 + 2bxy + hy^2 = 0$ are mutually perpendicular if

A. $a + b = 0$

B. $b + h = 0$

C. $h + a = 0$

D. $ah = -1$

Answer: C

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99. If the gradient of one of the lines given by $x^2 + hxy + 2y^2 = 0$ is twice that of the other, then h =

A. ± 2

B. ± 3

C. ± 1

D. $\pm 3/2$

Answer: B

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100. if $\frac{X^2}{a}+\frac{y^2}{b}+\frac{2xy}{h}=0$ represent pair of straight lies and slope one line is twice the other line then $ab:h^2$.

A. $1:2$

B. $2:1$

C. $8:9$

D. $9:8$

Answer: D

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101. The diagonals of a square are along the pair of lines whose equation is $2x^2 - 3xy - 2y^2 = 0$If (2,1) is a vertex of the square, then the vertex of the square adjacent to it may be

A. (1,4)

B. (1,-2)

C. (2,-1)

D. (1,2)

Answer: B

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102. Equation $x^2y^2 - 9y^2 + 6x^2y - 54y = 0$ represents

A. a pair of lines and a circle

B. a pair of lines and a parabola

C. a set of four lines which form a square

D. a set of four lines along a rectangle

Answer: C

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103. If the sum of the slopes of the lines given by $x^2 - 2cxy - 7y^2 = 0$ is four times their product , then

the value of c is

A. 2

B. -1

C. 1

D. -3

Answer: A

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

A. 3

B. -1

C. 1

D. -3

Answer: D

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

A. 2θ

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

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

D. (θ)

Answer: D

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106. If the pair of straight lines $xy - x - y + 1 = 0$ & the line $ax + 2y - 3 = 0$ are concurrent then $a =$

A. -1

B. 3

C. 1

D. 0

Answer: A

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107. Joint equation of the two 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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108. Mesure of angle between the two lines $x^2\left(\cos^2\theta - 1\right) - xy\sin^2\theta + y^2\sin^2\theta = 1$ is

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

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

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

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

Answer: D

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109. Two lines jointly given by the equation $xy - 2y + y - 2 = 0$ are

A. $||$ to coordinate axes separately and $\perp$ to each other

B. $\perp$ to coordinate axes separately and $\perp$ to each other

C. $||$ as well as $\perp$ to coordinates

D. $||$ and $\perp$ to coordinates axes, and $\perp$ to each other

Answer: D

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110. If the equation $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ jointly represents two lines whose separation equations are $x + y = 0$ and $2x - 3y = 1$ then : $g =$

A. 1

B. $1/2$

C. $-1/2$

D. -1

Answer: C

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111. If one of the lines $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ passes through the origin then

A. $a = -b$

B. $c = 0$

C. $a = b$

D. $h = 0$

Answer: B

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112. The point of intersection of lines gives by the equation $3x^2 + 10xy + 3y^2 - 15x - 21y + 18 = 0$ is

A. two sides of an equilateral triangle

B. diagonal of a rhombus

C. opposite sides of a parallelogram

D. opposite sides of a trapezium

Answer: B

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113. If the equation $k^2x^2 + 10xy + 3y^2 - 15x - 21y + 18 = 0$ represents

a pair of mutually perpendicular lines then

A. $k = 5$

B. $k = \pm\sqrt{2}$

C. $k = 3$

D. k is not real

Answer: D

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114. The distance between the point of intersection of the two lines $2009x^2 + 2010xy + 2011y^2 = 0$ and the point (1,1) is

A. 1

B. 2

C. $\sqrt{2}$

D. $2+\sqrt{3}$

Answer: C

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115. If the equation $ax^2+hxy+by^2+4gx+6fy+4c=0$ represents a pair of lines then

A. $4abc+4fgh=4.5af^2+4bg^2+h^2$

B. $4abc + 6fgh - 9af^2 - 4bg^2 - ch^2$

C. $4abc + 2fgh - 9af^2 + 2bg^2 + h^2$

D. $4abc + 12fgh - 9af^2 + 4bg^2 + 2h^2$

Answer: B

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116. The joint equation of lines which bisect the angle between the two lines $x^2 + 3xy + 2y^2 = 0$ is

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

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

C. $2x^2 + 3xy - 2y^2 = 0$

D. $2x^2 - 3xy + y^2 = 0$

Answer: A

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117. The equation of the bisectors of angle between the lines $x^2 - 4xy + y^2 = 0$ is

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

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

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

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

Answer: B

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118. If the lines $x^2 + 2hxy - y^2 = 0$ bisect the angle between the lines $2x^2 + 10xy - y^2 = 0$ then $h =$

A. $\frac{15}{2}$

B. $\frac{2}{15}$

C. $-\frac{3}{10}$

D. $-\frac{2}{15}$

Answer: C

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119. If the equation $7x^2 - kxy - 7y^2 = 0$ represents the bisectors of angles between the lines $2x^2 - 7xy + 4y^2 = 0$ then: $k =$

A. 2

B. 3

C. -3

D. 4

Answer: D

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

A. $2p + q = 0$

B. $pq + 1 = 0$

C. $2p + 3q = 0$

D. $pq = 1$

Answer: B

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121. If tihe lines $2x - y = 0$ is the bisector of an angle between the two lines $x^2 + 2hxy - 3y^2 = 0$ then $h =$

A. $-\frac{3}{8}$

B. $\frac{8}{3}$

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

D. $-\frac{8}{3}$

Answer: D

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122. Two lines given by equation $x^2 + xy + y^2 = 0$ are

A. coincident

B. parallel

C. mutualy perpendicular

D. imaginary

Answer: D

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123. The value of h for which the equation $3x^2 + 2hxy - 3y^2 - 40x + 30y - 75 = 0$ represents

a pair of straight lines , are

A. 4,4

B. 4,6

C. 4,-4

D. 0,4

Answer: A

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124. Joint equation of lines passing through the origin, and parallel to the lines $y - m_1x + c_1$ and $y = m_1x + c_2$, is

A. $m_1m_2x^2 - (m_1 \_ m_2)xy + y^2 = 0$

B. $m_1m_2x^2 + (m_1 + m_2)xy + y^2 = 0$

C. $m_1m_2y^2 - (m_1 + m_2)xy + x^2 = 0$

D. $m_1m_2y^2 + (m_1 + m_2)xy + x^2 = 0$

Answer: A

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125. Find the separate equation of two straight lines whose joint equation is ab $\left(x^2 - y^2\right) + \left(a^2 - b^2\right)xy = 0$

A. $ax - by - 0, bx + ay = 0$

B. $ax - by = 0, bx - ay = 0$

C. $ax + by = 0, bx + ay = 0$

D. $ax + by = 0, bx - ay = 0$

Answer: A

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126. The equations of the lines represented by the equation $ax^2 + (a + b)xy + by^2 + x + y = 0$ are

A. $ax + by + 1 = 0, x + y = 0$

B. $ax + by - 1 = 0, x + y = 0$

C. $ax + by + 1 = 0, x - y = 0$

D. None of these

Answer: A

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127. Separate equations of lines whose joint equation is $a(b-c)x^2-(ab-bc)xy+c(a-b)y^2=0$ are

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

B. $x+y=0, x-y=0$

C. $a(b-c)x-c(a-b)y=0, x-y=0$

D. None of these

Answer: C

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128. The equation

$$(x-5)^2+(x-5)(y-6)-2(y-6)^2=0$$

represents

A. a circle

B. two lines through origin

C. two lines through

D. None of these

Answer: C

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129. If $4ab = 3h^2$, then the ratio of the slopes of the lines represented by the equation $ax^2 + 2hxy + by^2 = 0$ will be

(A) $\sqrt{2}:1$

(B) $\sqrt{3}:1$

(C) $2:1$

(D) $1:3$

A. $\sqrt{2}:1$

B. $\sqrt{3}:1$

C. $2:1$

D. $3:1$

Answer: D

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130. The equation of the perpendiculars drawn from the origin to the lines represented by the equation $2x^2 - 10xy + 12y^2 + 5x - 16y - 3 = 0$, is

A. $6x^2 + 5xy + y^2$

B. $6y^2 + 5xy + x^2 = 0$

C. $6x^2 - 5xy + y^2$

D. None of these

Answer: A

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131. The equation $4x^2 + 12xy + 9y^2 + 2gx + 2fy + c = 0$ will represents two real partall straight lines. if

A. $g = 4, f = 9, c = 0$

B. $g = 2, f = 3, c = 1$

C. $g = 2, f = 3, c$ is ay number

D. $g = 4, f = 9, c > 1$

Answer: C

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132. Equation of one of the two lines $x^2 + 2xy + \cos\theta - y^2 = 0$ is

A. $x - y.\cot\theta = 0$

B. $x + y.\tan\theta = 0$

C. $x.\sin\theta + y(1 + \cos\theta) = 0$

D. $x.\cos\theta + y(1 + \sin\theta) = 0$

Answer: C

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133. The pair of straight lines passing through that point $(1, 2)$ and perpendicular to the pair of straight lines $3x^2 - 8xy + 5y^2 = 0$, is

A. $(5x + 3y + 11)(x + y + 3) = 0$

B. $(5x + 3y - 11)(x + y - 3) = 0$

C. $(5x + 3y - 11)(x + y + 3) = 0$

D. $(3x - 5y + 11)(x + y - 3) = 0$

Answer: B

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134. The area of triangle (in sq units) formed by the lines $x^2 - 4y^2 = 0$ and $x = a,$ is

A. $2a^2$

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

C. $\frac{\sqrt{3}}{2}a^2$

D. $\frac{2}{\sqrt{3}}a^2$

Answer: B

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135. If the equation $x^2 - y^2 - x - \lambda y - 2 = 0$ represents a pair of lines then $\lambda =$

A. 3,-3

B. $-3, 1$

C. 3,1

D. $-1, 1$

Answer: A

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136. If $\lambda x^2 - 5xy + 6y^2 + x - 3y = 0$ represents a pair of staight lines, then their point of intersection is:

A. (1,3)

B. (-1,3)

C. (3,1)

D. (-3,-1)

Answer: D

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137. If the acute alngles betwene the pairs of lines $3x^2 + 7xy + 4y^2 = 0$ and $6x^2 - 5xy + y^2 = 0$ are θ_1 and θ_2 then

A. $\theta_1 - \theta_2$

B. $\theta_1 = 2\theta_2$

C. $\theta_2 - 2\theta_1$

D. None of these

Answer: A

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138. If the angle between the lines $ax^2 + xy + by^2 = 0$ is 45°, then

A. $a = 1, b = 6$

B. $a = 1, b = -6$

C. $a = 1, b = 1$

D. None of these

Answer: B

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139. If the angle between the two lines $y^2 + kxy - x^2 \tan^2\theta = 0$ is 2θ then $k =$

A. 0

B. 1

C. 2

D. $\tan\theta$

Answer: A

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140. If the sum of slopes of the lines $x^2 - 2xy.\tan\theta - y^2 = 0$ is 4, then: $0 =$

A. 0°

B. 45°

C. $60^\circ d$

D. $-\tan^{-1} 2$

Answer: D

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141. If the lines represented by the equation $2x^2 - 3xy + y^2 = 0$ make angles α and β with X-axis, then $\cot^2 \alpha + \cot^2 \beta$ is equal to

A. 0

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

C. $\frac{7}{4}$

D. $\frac{5}{4}$

Answer: D

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142. Angle between the lines $\left(x^2+y^2\right)\sin\theta-2xy=0$ is

A. θ

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

C. $\frac{\pi}{2}-\theta$

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

Answer: C

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143. If the angle between the two lines $x^3 - 3xy + \lambda y^2 + 3x - 5y + 2 = 0, \lambda \geq 0$ is $\tan^{-1}(1/3)$ then: $\lambda =$

A. 2

B. 0

C. 3

D. 1

Answer: A

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144. Equation $x^2 + m_1 y^2 + m_2 xy = 0$ jointly represents a pair of perpendicular lines if

A. $m_1 = -1$

B. $m_1 = 2m_2$

C. $m_2 = 2m_1$

D. $m_1 m_2 = -1$

Answer: A

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

A. 2θ

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

C. θ

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

Answer: C

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146. 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. $-1/2$

B. -2

C. 1

D. 2

Answer: C

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147. If the bisectors of the angles between the pairs of lines $ax^2 + 2hxy + by_2 = 0$ and $ax^2 + 2hxy + by^2 + \lambda(x^2 + y^2) = 0$ are coincident, then: $\lambda =$

A. a

B. b

C. h

D. any real number

Answer: D

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148. Joint equation of bisectors of angles between the two lines $x^2 + 2xy.\cot\theta + y^2 = 0$ is

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

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

C.

D. $\left(x^2 - y^2\right)\cot\theta = 2xy$

Answer: A

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149. If the bisectors of the angles between the lines given by $3x^2 - 4xy + 5y^2 = 0$ and

$5x^2 + 4xy + 3y^2 = 0$ asre same, then, the angle made by the lines in the first pair with the second is

A. 30°

B. 60°

C. 45°

D. 90°

Answer: D

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150. 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. $2x + y - 1 = 0$

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

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

Answer: D

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151. The lines $y = mx$ bisects the angle between the lines $ax^2 + 2hxy + by^2 = 0$ if

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

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

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

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

Answer: C

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152. 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 1 (b) 2 (c) $-\frac{1}{2}$ (d) -1

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

B. -2

C. ± 1

D. 2

Answer: C

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

A. 1

B. 2

C. 4

D. 8

Answer: D

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155. Orthocentre of the triangle formed by the pair of lines $xy = 0$ and the lines $2x + 3y + 4 = 0$ is

A. $(2, 3)$

B. $(3, 2)$

C. $(0, 0)$

D. $(4, -4)$

Answer: C

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156. Sum and product of slopes of two lines through the origin are respectively the A.M. And G.M. of 9 and 16. Joint equation of bisectors of these lines is

A. $24x^2 - 25xy + 2y^2 = 0$

B. $25x^2 + 44xy - 25y^2 = 0$

C. $11x^2 - 25xy - 11y^2 = 0$

D. None of these

Answer: B

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157. If the pair of lines $ax^2 - 2xy + by^2 = 0$ and bx^2-2xy+ay^2=0`

be such that each pair bisects the angle between the other pair , then |a-b| equals to

A. 0

B. 1

C. 2

D. 4

Answer: C

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158. If pairs of lines $3x^2 - 2pxy - 3y^2 = 0$ and $5x^2 - 2qxy - 5y^2 = 0$ are such that each pair bisects then angle between the other pair then $pq =$

A. -1

B. -3

C. -5

D. -15

Answer: D

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159. If one of the two lines $6x^2 + xy - y^2 = 0$ coincides with one of the two lines $3x^2 - axy + y^2 = 0$ ten

A. $a^2 - 3a + 28 = 0$

B. $2a^2 - a - 28 = 0$

C. $2a^2 - 15a + 28 = 0$

D. None of these

Answer: B

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160. 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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161. If the centroid of the triangle formed by the lines $2y^2 + 5xy - 3x^2 = 0$ and $x + y = k$ is $\left(\frac{1}{18}, \frac{11}{18}\right)$, then the value of k is

A. -1

B. 0

C. 1

D. None of these

Answer: C

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162. 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

A. $hg + ab = 0$

B. $ah + bg = 0$

C. $h^2 = ab$

D. $ag + bh = 0$

Answer: A

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163. If the equation $x^2 + (a+b)xy + aby^2 + x + ab = 0$ represents two parallel lines, then

A. $a + b = 0$

B. $a = 4b$

C. $a = b$

D. None of these

Answer: B

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164. 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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165. Three lines whose joint equation is $4x^2y - y^3 = 0$ form a triangle which is

A. isosceles

B. equilateral

C. right angled

D. None of these

Answer: D

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166. If a line $y - mx$ bisects the anglebetween the lines $\left(\tan^2\theta + \cos^2\theta\right)x^2 + 2xy\tan\theta - y^2\sin^2\theta = 0$ when θ is 60° then : $\sqrt{3}m^2 + 4m =$

A. 1

B. $\frac{1}{\sqrt{3}}$

C. $\sqrt{3}$

D. $7\sqrt{3}$

Answer: C

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167. The lines $y = mx$ bisects the angle between the lines $ax^2 + 2hxy + by^2 = 0$ if

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

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

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

D. None of these

Answer: B

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168. If two pairs of straight lines having equations $y^2 + xy - 12x^2 = 0$ and $ax^2 + 2hxy + by^2 = 0$ have one line common, then a =

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

B. $8(h + 2b)$

C. $2(b + h)$

D. $-3(b + h)$

Answer: A

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169. 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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170. The centroid of the triangle whose three sides are given by the combined equation $(x^2 + 7xt + 2y^2)(y - 1) = 0$, is

A. $\left(\frac{2}{3}, 0\right)$

B. $\left(\frac{7}{3}, \frac{2}{3}\right)$

C. $\left(-\frac{7}{3}, \frac{2}{3}\right)$

D. None of these

Answer: C

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171. 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. $\sqrt{7}$

C. 4

D. 0

Answer: C

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172. If the angle between the lines represented by the equation $y^2 + kxy - x^2 \tan^2 A = 0 is 2A$, then K is equal to

A. 0

B. 2

C. 4

D. -2

Answer: A

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173. Separate equations of the two lines jointly given by $ab(x^2 - y^2) + (a^2 - b^2)xh = 0$ are

A. $ax - by = 0, bx + ay = 0$

B. $ax - by = 0, bx - ay = 0$

C. $ax + by = 0, bx + ay = 0$

D. $ax + by = 0, bax - ay = 0$

Answer: A

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174. Two lines given by the joint equation $ax^2(b-c) - xy(ab-bc) + cy^2(a-b) = 0$ are

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

B. $x + y = 0, x - y = 0$

C. $a(b-c)x - c(a-b)y = 0, x - y = 0$

D. None of these

Answer: C

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175. The equations of the lines represented by the equation $ax^2 + (a+b)xy + by^2 + x + y = 0$ are

A. $ax + by + 1 = 0, x + y = 0$

B. $ax + by - 1 = 0, x + y = 0$

C. $ax + by + 1 = 0, x - y = 0$

D. None of these

Answer: A

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176. If the area of the triangle formed by the lines $x^2 - 4y^2 = 0$ and $x = a$ is 8, then $a =$

A. ± 1

B. ± 2

C. ± 3

D. ± 4

Answer: D

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177. If the two lines $2x^2 - 3xy + y^2 = 0$ makes anlges α and β with X-axis then : $\csc^2\alpha + \csc^2\beta =$

A. 2

B. $7/2$

C. $15/4$

D. $13/4$

Answer: D

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178. If sum of slopes of the lines $x^2 - 2xy\tan A - y^2 = 0$ si 4, then: $\angle a =$

A. 0°

B. 45°

C. 60°

D. $\tan^{-1}(-2)$

Answer: D

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179. Measure of angle between the two lines $\left(x^2+y^2\right)\sin\theta+2xy=0$ is

A. θ

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

C. $\frac{\pi}{2}-\theta$

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

Answer: C

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180. Find the angle between the lines repersented by the equation $x^2 - 2pxy + y^2 = 0$

A. $\sec^{-1} p$

B. $\cos^{-1} p$

C. $\tan^{-1} p$

D. None of these

Answer: A

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181. If (a, a^2) falls inside the angle made by the lines $y = \frac{x}{2}, x > 0$ and $y = 3x, x > 0$, then a belongs to the interval

A. $\left(0, \frac{1}{2}\right)$

B. $(3, \infty)$

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

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

Answer: C

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182. If the bisectors of angles represented by $ax^2 + 2hxy + by^2 = 0$ and $a'x^2 + 2h'xy + b'y^2 = 0$ is same , then

A. $(a - b)h' = (a' - b')h$

B. $(a - b)h' = (a' - b')h$

C. $(a + b)h' = (a' - b')h$

D. $(a - b)h' = (a' + b')h$

Answer: A

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183. If $r\left(1-m^2\right)+m(p-q)=0$, then a bisector of the angle between the lines represented by the equation $px^2-2rxy+qy^2=0$, is.

A. $y=x$

B. $y=-x$

C. $y=mx$

D. $x=my$

Answer: C

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184. If the bisector of the angles between the lines in the two pairs $3x^2 - 4xy + 5y^2 = 0$ and $5x^2 + 4xy + 3y^2 - 0$ are same then the angle made by the first pair with the second is

A. 30°

B. 45°

C. 60°

D. 90°

Answer: D

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

A. rectangle

B. trapezium

C. rhombus

D. None of these

Answer: C

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186. The equation $x - y = 4$ and $x^2 + 4xy + y^2 = 0$ represent the sides of

A. equilateral

B. right angled

C. isosceles

D. None of these

Answer: A

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

C. 2α

D. α

Answer: D

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188. Joint equation of the straight line passing through the origin, one of which is parallel and other perpendicular to the line $6x - 4y + 3 = 0$ is

A. $6x^2 - 5xy - 6y^2 = 0$

B. $6x^2 - 5xy - 5y^2 = 0$

C. $6x^2 + 5xy - 6y^2 = 0$

D. $5x^2 + 5xy - 6y^2 = 0$

Answer: C

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189. Combined equation of the lines passing through the origin and perpendicular to the lines $2x^2 - 3xy + y^2 = 0$ is

A. $x^2 - 3xy - y^2 = 0$

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

C. $x^2 - 3xy - 2y^2 = 0$

D. $x^2 + 3xy + 2y^2 = 0$

Answer: D

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190. Joint equation of pair of lines through $(3, -2)$ and parallel to $x^2 - 4xy + 3y^2 = 0$ is

A. $x^2 - 4y + 3y^2 + 14x + 24y + 45 = 0$

B. $x^2 - 4xy + 3y^2 - 14x - 24y + 45 = 0$

C. $x^2 - 4xy + 3y^2 - 14x - 24y + 45 = 0$

D. $x^2 - 4xy + 3y^2 - 14x + 24y + 45 = 0$

Answer: D

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

A. 2θ

B. θ

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

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

Answer: B

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192. If $kxy + 10x + 6y + 4 = 0$ represents a pair of lines, then $k =$

A. 30

B. 15 or 0

C. 15

D. 30 or 0

Answer: B

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193. The angle between the lines in $x^2 - xy - 6y^2 - 7x + 31y - 18 = 0$ is

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

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

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

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

Answer: A

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194. The pair equation of the lines passing through the origin and having slopes 3 and $-\frac{1}{3}$, is

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

B. $3x^2 + 8xy + 3y^2 = 0$

C. $3y^2 - 8xy - 3x^2 = 0$

D. $3x^2 + 8xy - 3y^2 = 0$

Answer: A

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195. If one of the lines given by $ax^2 + 2hxy + by^2 = 0$ is $4x - 5y = 0$ then

A. $25a + 40h + 16b = 0$

B. $25a - 40h - 16b = 0$

C. $25a - 40h + 16b = 0$

D. $25a + 40h - 16b = 0$

Answer: A

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Test Your Grasp

1. Joint equation of the X-axis and the bisector of the angle in the first quadrant is

A. $xy + y^2 = 0$

B. $xy - x^2 = 0$

C. $xy - y^2 = 0$

D. $xy + x^2 = 0$

Answer:

Watch Video Solution

2. If m is the slope of one fo the two lines jointly given by the equation $2x^2 + 4xy + y^2 = 0$ then

A. $m^2 + 2m + 4 = 0$

B. $m^2 + 4m + 2 = 0$

C. $2m^2 + 4m + 1 = 0$

D. $2m^2 + 4m = 0$

Answer:

Watch Video Solution

3. If the two lines $(3x - y)^2 = k(x^2 + y^2)$ are mutualy perpendicularl then: $k =$

A. 5

B. 6

C. -5

D. -6

Answer:

Watch Video Solution

4. If $kx + 3y = 0$ is one of the two lines $5x^2 + 3xy - y^2 = 0$ then $k^2 - 9k =$

A. 40

B. 46

C. -45

D. -40

Answer:

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5. If one of the two lines $3x^2 - kxy - y^2 = 0$ bisects an angle between the co-ordinates axes, then : $k =$

A. ± 1

B. ± 3

C. -2

D. 2^{-1}

Answer:

Watch Video Solution

6. If the two lines $kx^2 + 5xy + 9y^2 = 0$ are equally inclined with the cordinates axes, then: $k =$

A. 5

B. -5

C. ± 9

D. ± 3

Answer:

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7. Combined equation of the two lines passing through the origin, forming an equilateral triangle with the line $x + y + \sqrt{3} = 0$ is

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

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

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

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

Answer:

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8. If the lines $3x^2 - kxy - 3y^2 = 0$ and $x + 2y = 8$ form and isosceles triangle then: $k =$

A. 4

B. -4

C. -8

D. 8

Answer:

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9. Length of each leg of an isosceles right angled triangle, formed by the lines $3x^2 - 8xy - 3y^2 = 0$ and $y - 2x - 3$ is

A. $\frac{2\sqrt{3}}{5}$

B. $\frac{3\sqrt{2}}{5}$

C. $\frac{\sqrt{3}}{5}$

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

Answer:

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10. If the equation $kxy + 10x + 6y + 4 = 0$ represents a pair of lines then : $k =$

A. 12

B. 13

C. 15

D. 16

Answer:

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11. If the angle between the lines $ax^2 + xy + by^2 = 0$ is 45°, then

A. $a = 2, b = 3$

B. $a = 1, b = -6$

C. $a = 4, b = 5$

D. $a = 3, b = 2$

Answer:

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12. If the equation $ax^2 + ay^2 + 2gx + 2fy + c = 0$ represents a pair of lines then

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

B. $f^2 = g^2 + acd$

C. $g^2 = f^2 + ac$

D. $c^2 = a^2 + fg$

Answer:

Watch Video Solution

13. If $3h^2 = 4ab$, then the ratio of the slopes of the lines $ax^2 + 2hxy + by^2 = 0$ is

A. $-1:2$

B. $-3:2$

C. $1:3$

D. $2:3$

Answer:

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14. Lines represented by the equation $5x^2 - 2xy + 2y^2 = 0$ are

A. Imaginary

B. Coincident

C. Real

D. Perpendicular

Answer:

Watch Video Solution

15. If one of the lines $kx^2 + xy - y^2 = 0$ bisects an angle between the co-ordinate then: $k =$

A. 0,2

B. 1,2

C. $-1, 2$

D. 2,3

Answer:

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16. Measure of angle between the lines $\sqrt{2}\left(x^2+y^2\right)=4xy$ is

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

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

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

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

Answer:

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17. If the angle between the lines $3x^2 - 4y^2 = 0$ is $\tan^{-1} k$, then $k =$

A. $\frac{7}{4}$

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

C. $\frac{4}{7}$

D. $\frac{1}{7}$

Answer:

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18. Joint equation of two lines through the origin and parallel to the pair of lines $2x^2 - xy - y^2 + 5x + y + 2 = 0$ is

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

B. $5x^2 + xy + 2y^2 = 0$

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

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

Answer:

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19. If the equation $x^2 + 2hxy + 2fy + c = 0$ represents a pair of lines, then

A. $f^2 + ch = 0$

B. $f^2 + ch^2 = 0$

C. $f^2 - ch^2 = 0$

D. $f^2 - c^2h^2 = 0$

Answer:

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