

- The pair of straight lines perpendicular to the pair $ax^2 + 2hxy + by^2 = 0$ has the equation
 (a) $ax^2 - 2hxy + by^2 = 0$ (b) $ay^2 + 2hxy + bx^2 = 0$
 (c) $bx^2 + 2hxy + ay^2 = 0$ (d*) $bx^2 - 2hxy + ay^2 = 0$
- 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
- If $x^2 - kxy + y^2 + 2y + 2 = 0$ denotes a pair of straight lines then $k =$
 (a) 2 (b) $\frac{1}{\sqrt{2}}$ (c) $2\sqrt{2}$ (d*) $\sqrt{2}$
- The lines represented by the equation $Ax^2 + 2Bxy + Hy^2 = 0$ are perpendicular if
 (a*) $A + H = 0$ (b) $B + H = 0$ (c) $AH = -1$ (d) $A + B = 0$
- The angle between the lines $2x^2 - 7xy + 3y^2 = 0$ is
 (a) 60° (b*) 45° (c) $\tan^{-1}(7/6)$ (d) 30°
- $2x^2 + 7xy + 3y^2 + 8x + 14y + \lambda = 0$ will represent a pair of st. lines when $\lambda =$
 (a) 2 (b) 4 (c) 6 (d*) 8
- The gradient of one of the lines $x^2 + hxy + 2y^2 = 0$ is twice that of the other, then $h =$
 (a*) ± 3 (b) $\pm 3/2$ (c) ± 2 (d) ± 1
- 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
 (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) $3x^2 - 3y^2 - 8xy - 10x - 15y - 20 = 0$
- If the equation $x^2 + y^2 + 2gx + 2fy + 1 = 0$ represents a pair of lines, then
 (a) $f^2 - g^2 = 1$ (b*) $f^2 + g^2 = 1$ (c) $g^2 - f^2 = 1$ (d) $f^2 + g^2 = \frac{1}{2}$
- The sum of the slopes of the lines represented by $4x^2 + 2hxy - 7y^2 = 0$ is equal to the product of the slopes, then h is
 (a) -4 (b) 4 (c*) -6 (d*) -2
- The angle between the st. lines $x^2 + 4xy + y^2 = 0$ is
 (a) 30° (b) 45° (c*) 60° (d) none of these
- The angle between the pair of st. lines $x^2 + 4y^2 - 7xy = 0$ is
 (a*) $\tan^{-1} \frac{1}{3}$ (b) $\tan^{-1} 3$ (c) $\tan^{-1} \left(\frac{\sqrt{33}}{5} \right)$ (d) $\tan^{-1} \left(\frac{\sqrt{33}}{10} \right)$
- Out of the two st. lines represented by an equation $ax^2 + 2hxy + by^2 = 0$ if one will be $y = mx$, then
 (a*) $a + 2hm + bm^2 = 0$ (b) $b + 2hm + am^2 = 0$
 (c) $h + 2am + bm^2 = 0$ (d) $h + 2hm + am^2 = 0$
- If $x^2 - 2pxy - y^2 = 0$ and $x^2 - 2qxy - y^2 = 0$ bisect angles between each other, then
 (a) $p + q = 1$ (b) $pq = 1$
 (c) $pq + 1 = 0$ (d*) $p^2 + pq + q^2 = 0$
- The equation : $8x^2 + 8xy + 2y^2 + 26x + 13y + 15 = 0$ represents a pair of parallel st. lines. The distance between them is
 (a) $\frac{7}{\sqrt{5}}$ (b*) $\frac{7}{2\sqrt{5}}$ (c) $\frac{2}{\sqrt{5}}$ (d) none of these

16. The angle between the pair of straight lines $y^2 \sin^2 \theta - xy \sin^2 \theta + x^2 (\cos^2 \theta - 1) = 0$, is
 (a) $\frac{\pi}{3}$ (b) $\frac{\pi}{4}$ (c) $\frac{2\pi}{3}$ (d*) none of these
17. The equation of the 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) $4/\sqrt{3}$ (c*) 2 (d) $2\sqrt{3}$
18. If $ax^2 + 2xy - 3y^2 + 4x + c = 0$ represents a pair of perpendicular lines, then
 (a) $a = 3, c = 2$ (b*) $a = 3, c = 6/5$
 (c) $a = 3, c = 4/5$ (d) none of these
19. If the equation $x^2 + y^2 + 2gx + 2fy + 1 = 0$ represents a pair of lines, then
 (a*) $f^2 + g^2 = 1$ (b) $f^2 - g^2 = -1$ (c) $f^2 + g^2 = 2$ (d) none of these
20. The angle between the lines $ax^2 + 2hxy + ay^2 = 0$ is given by
 (a) $\tan^{-1} \left| \frac{2\sqrt{h^2 - a^2}}{a} \right|$ (b*) $\tan^{-1} \left| \frac{\sqrt{h^2 - a^2}}{a} \right|$
 (c) $\tan^{-1} \left| \frac{\sqrt{h^2 - a^2}}{2a} \right|$ (d) none of these
21. If the sum of the slopes of the lines given by $4x^2 + 2kxy - 7y^2 = 0$ is equal to the product of the slopes, then $k =$
 (a) -4 (b) 4 (c*) -2 (d) 2
22. The distance between the parallel lines given by $4x^2 + 12xy + 9y^2 - 6x - 9y + 2 = 0$ is
 (a*) $\frac{1}{\sqrt{13}}$ (b) $\frac{2}{\sqrt{13}}$ (c) $\frac{10}{\sqrt{13}}$ (d) none of these
23. The point of intersection of the lines given by $x^2 - y^2 + 4x + 4y = 0$ is
 (a) (2, 2) (b*) (-2, 2) (c) (2, -2) (d) none of these
24. 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
25. 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
26. The equation $ax^2 + by^2 + cx + cy = 0$ represents a pair of lines if
 (a*) $c = 0$ (b) $a + b = 0$ (c*) $c = 0$ or $a + b = 0$ (d) none of these
27. 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
28. The distance between the parallel lines given by $x^2 + 2\sqrt{2}xy + 2y^2 + 4x - 8 = 0$ is
 (a*) 4 (b) $2\sqrt{2}$ (c) $4\sqrt{2}$ (d) 8

