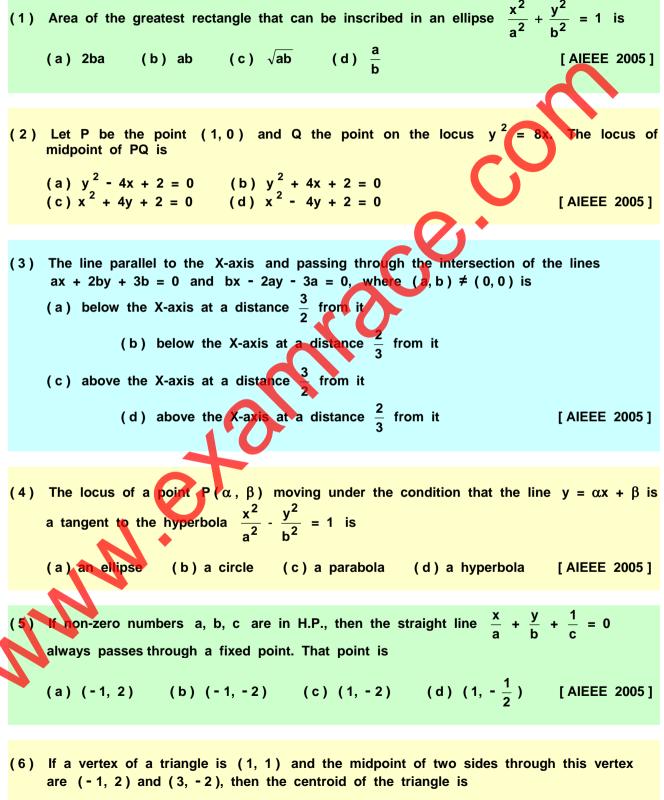
Page 1



a) 
$$(-1, \frac{7}{3})$$
 (b)  $(-\frac{1}{3}, \frac{7}{3})$  (c)  $(1, \frac{7}{3})$  (d)  $(\frac{1}{3}, \frac{7}{3})$  [AIEEE 2005]

(

(7) If the circles  $x^{2} + y^{2} + 2ax + cy + a = 0$  and  $x^{2} + y^{2} - 3ax + dy - 1 = 0$  intersect in two distinct points P and Q, then the line 5x + by - a = 0 passes through P and Q for (a) exactly one value of a
(b) no value of a
(c) infinitely many values of a
(d) exactly two values of a [ ALEEE 2005 ] (8) A circle touches the X-axis and also touches the circle with centre at (0, 3) and radius 2. The locus of the centre of the circle is (a) an ellipse (b) a circle (c) a hyperbola (d) a parabola [AIEEE 2005] (9) If a circle passes through the point (a, b) and cuts the circle  $x^2 + y^2 = p^2$ orthogonally, then the equation of the locus of its centre is (a)  $x^{2} + y^{2} - 3ax - 4by + (a^{2} + b^{2} - p^{2}) = 0$ (b)  $2ax + 2by - (a^{2} - b^{2} + p^{2}) = 0$ (c)  $x^{2} + y^{2} - 2ax - 3by (a^{2} - b^{2} - p^{2}) = 0$ (d)  $2ax + 2by - (a^{2} + b^{2} + p^{2}) = 0$ [AIEEE 2005] (10) An ellipse has OB as semi minor axis, F and F' its foci and the angle FBF' is a right angle. Then the eccentricity of the ellipse is

(a) 
$$\frac{1}{\sqrt{2}}$$
 (b)  $\frac{1}{2}$  (c)  $\frac{1}{4}$  (d)  $\frac{1}{\sqrt{3}}$  [AIEEE 2005]

(11) If the pair of lines  $ax^2 + 2(a + b)xy + by^2 = 0$  lie along diameters of a circle and divide the circle into four sectors such that the area of one of the sectors is thrice the area of another sector, then

(a)  $3a^2 - 10ab + 3b^2 = 0$  (b)  $3a^2 - 2ab + 3b^2 = 0$ (c)  $3a^2 + 10ab + 3b^2 = 0$  (d)  $3a^2 + 2ab + 3b^2 = 0$  [AIEEE 2005]

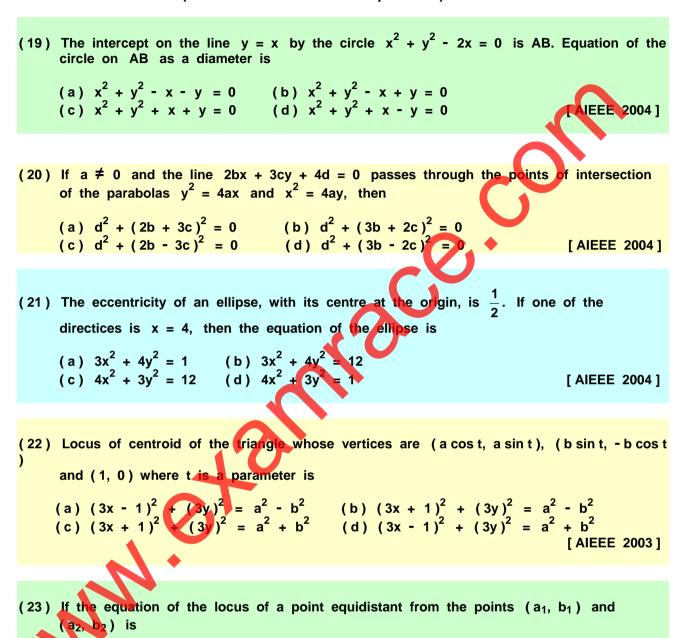
- (12) Let A(2, -3) and B(-2, 1) be the vertices of a triangle ABC. If the centroid of this triangle moves on the line 2x + 3y = 1, then the locus of the vertex C is the line.
  - (a) 2x + 3y = 9 (b) 2x - 3y = 7 (c) 3x + 2y = 5 (d) 3x - 2y = 3

[AIEEE 2004]

(13) The equation of the straight line passing through the point (4, 3) and making intercepts on the coordinate axes whose sum is -1 is

(a) 
$$\frac{x}{2} + \frac{y}{3} = -1$$
 and  $\frac{x}{-2} + \frac{y}{1} = -1$   
(b)  $\frac{x}{2} - \frac{y}{3} = -1$  and  $\frac{x}{-2} + \frac{y}{1} = -1$   
(c)  $\frac{x}{2} + \frac{y}{3} = 1$  and  $\frac{x}{-2} + \frac{y}{1} = 1$   
(d)  $\frac{x}{2} - \frac{y}{3} = 1$  and  $\frac{x}{-2} + \frac{y}{1} = 1$   
(a)  $\frac{x}{2} - \frac{y}{3} = 1$  and  $\frac{x}{-2} + \frac{y}{1} = 1$   
(14) If the sum of the slopes of the lines given by  $2^{2} - 2exy - 7y^{2} = 0$  is four times their product, the c has the value  
(a) 1 (b) -1 (c) 2 (d) + 2 [AIEEE 2004]  
(15) If one of the lines given by  $6x^{2} - 4x + 4cy^{2} = 0$  is  $3x + 4y = 0$ , then c equals  
(a) 1 (b) -1 (c) 2 (d) -3 [AIEEE 2004]  
(16) If a circle passes through the point (a, b) and cuts the circle  $x^{2} + y^{2} = 4$   
(c)  $2a + 2by + (a^{2} + b^{2} + 4) = 0$  (b)  $2ax + 2by - (a^{2} + b^{2} + 4) = 0$   
(c)  $2a + 2by + (a^{2} + b^{2} + 4) = 0$  (d)  $2ax - 2by - (a^{2} + b^{2} + 4) = 0$   
(f) Avariable circle passes through the fixed point A (p, q) and touches the X-axis. The locus of the other end of the diameter through A is  
(a)  $(x - p)^{2} = 4qx$  (d)  $(y - q)^{2} = 4px$  [AIEEE 2004]  
(15) If the lines  $2x + 3y + 1 = 0$  and  $3x - y - 4 = 0$  lie along diameters of a circle of

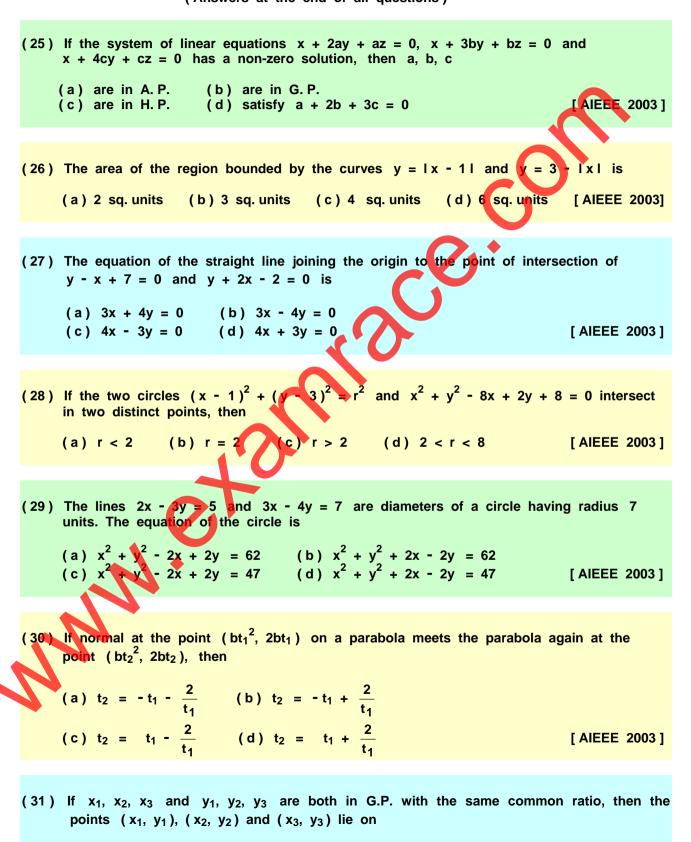
(a) 
$$x^{2} + y^{2} - 2x + 2y - 23 = 0$$
 (b)  $x^{2} + y^{2} - 2x - 2y - 23 = 0$   
(c)  $x^{2} + y^{2} + 2x + 2y - 23 = 0$  (d)  $x^{2} + y^{2} + 2x - 2y - 23 = 0$  [AIEEE 2004]



(a) 
$$\sqrt{a_1^2 + b_1^2 - a_2^2 - b_2^2}$$
 (b)  $a_1^2 - a_2^2 + b_1^2 - b_2^2$   
(c)  $\frac{1}{2}(a_1^2 + a_2^2 + b_1^2 + b_2^2)$  (d)  $\frac{1}{2}(a_1^2 + b_2^2 - a_1^2 - b_1^2)$  [AIEEE 2003]

(24) If the pair of straight lines  $x^2 - 2pxy - y^2 = 0$  and  $x^2 - 2qxy - y^2 = 0$  be such that each pair bisects the angle between the other pair, then

(a) p = q (b) p = -q (c) pq = 1 (d) pq = -1 [AIEEE 2003]



(a) a circle (b) an ellipse (c) a straight line (d) a hyperbola [AIEEE 2003]

## 11 - TWO DIMENSIONAL GEOMETRY Page 6 (Answers at the end of all questions) (32) If the tangent on he point (2 sec $\phi$ , 3 tan $\phi$ ) of the hyperbola $\frac{x^2}{4} - \frac{y^2}{9} = 1$ is parallel to 3x - y + 6 = 0, then the value of $\phi$ is AIEEE 2003 ] (a) 30° (b) 45° (c) 60° (d) 75° (33) The equation of the normal to the hyperbola $\frac{x^2}{16} - \frac{y^2}{9} = 1$ at (-4, 0) is (a) x = 0 (b) x = 1 (c) y = 0 (d) 2x - 3y = 1[AIEEE 2003] (34) The square of length of tangent from (3, -4) on the circle $x^2 + y^2 - 4x - 6y + 3 = 0$ is (d) <u>50</u> (c) 40 (b) 30 (a) 20 [AIEEE 2002]

(35) The equation of straight line passing through the intersection of the lines x - 2y = 1and x + 3y = 2 and parallel to 3x + 4y = 0 is

(a) 
$$3x + 4y + 5 = 0$$
  
(b)  $3x + 4y - 10 = 0$   
(c)  $3x + 4y - 5 = 0$   
(d)  $3x + 4y + 6 = 0$   
[AIEEE 2002]

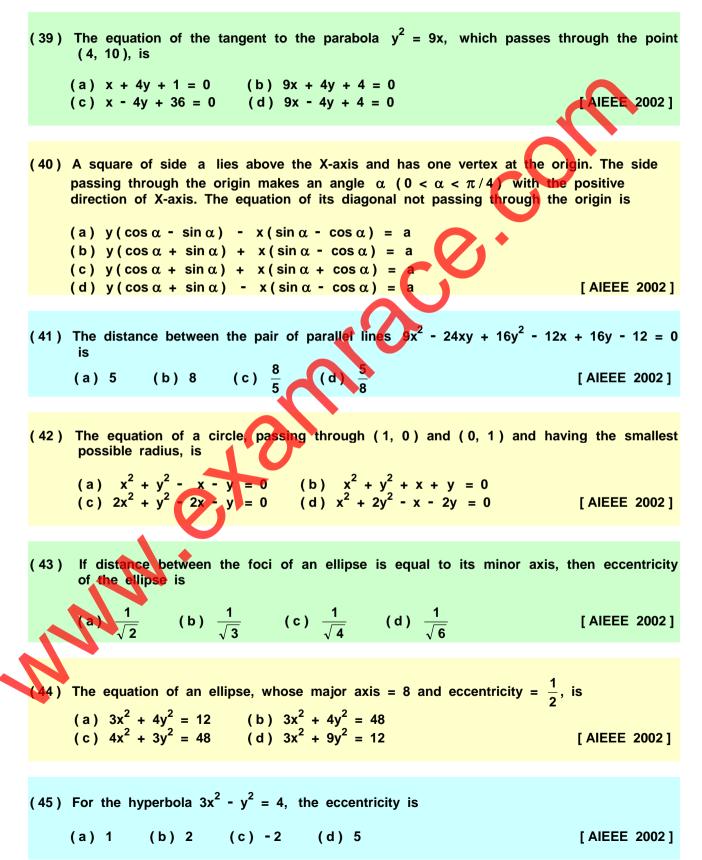
(36) The medians BE and AD of a triangle with vertices A(0, b), B(0, 0) and C(a, 0) are perpendicular to each other if

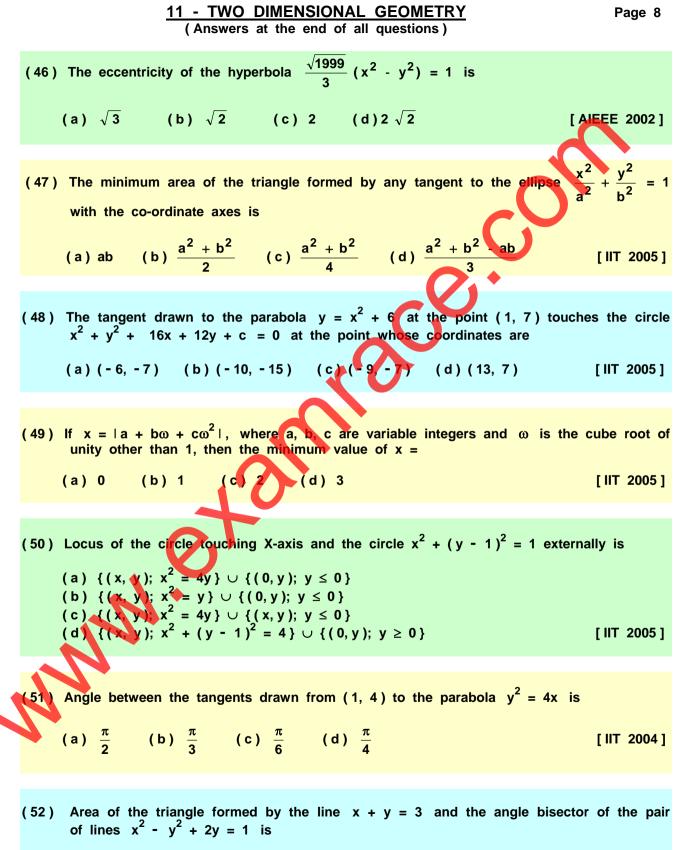
 $a = \frac{b}{2}$  (b)  $b = \frac{a}{2}$  (c) ab = 1 (d)  $a = \pm \sqrt{2b}$  [AIEEE 2002]

(37) The equation of the curve through the point (1, 0), whose slope is  $\frac{y-1}{x^2 + x}$ , is (a) (y-1)(x+1) + 2x = 0 (b) 2x(y-1) + x + 1 = 0(c) x(y-1)(x+1) + 2 = 0 (d) x(y+1) + y(x+1) = 0 [AIEEE 2002]

(38) The angle between the lines  $a_1x + b_1y + c_1 = 0$  and  $a_2x + b_2y + c_2 = 0$  is

(a) 
$$\tan^{-1} \left[ \frac{a_1b_1 - a_2b_2}{a_1a_2 + b_1b_2} \right]$$
 (b)  $\tan^{-1} \left[ \frac{a_1b_2 + a_2b_1}{a_1a_2 - b_1b_2} \right]$   
(c)  $\cot^{-1} \left[ \frac{a_1b_1 - a_2b_2}{a_1a_2 + b_1b_2} \right]$  (d)  $\cot^{-1} \left[ \frac{a_1a_2 + b_1b_2}{a_1b_2 - a_2b_1} \right]$  [AIEEE 2002]

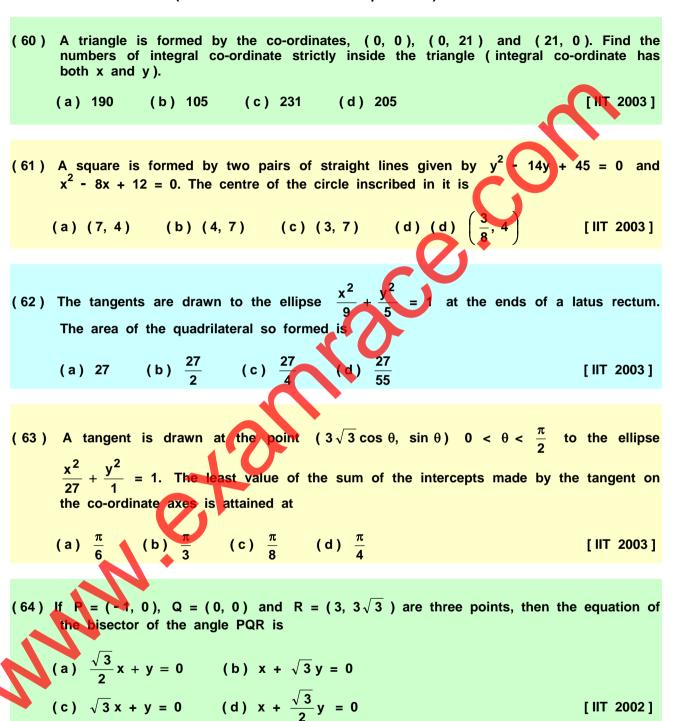




(a) 1 (b) 3 (c) 2 (d) 4

[ IIT 2004 ]

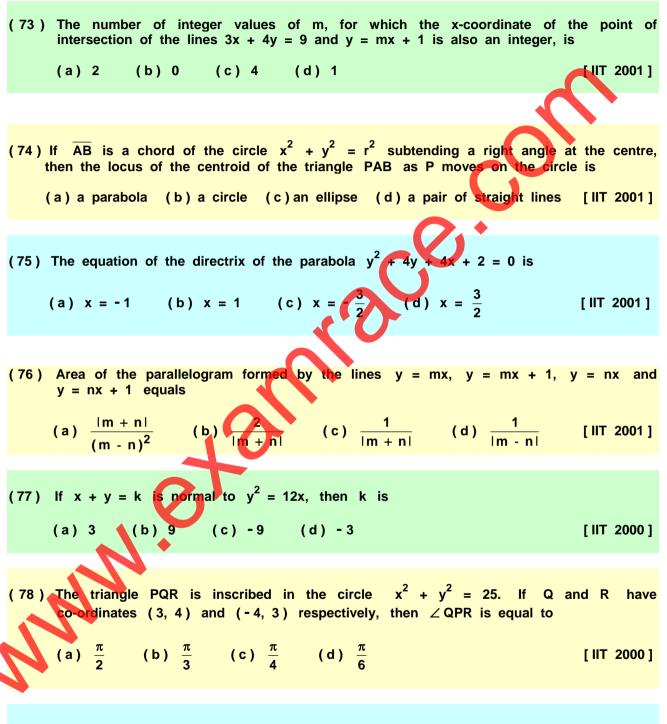
(53) Diameter of the given circle  $x^2 + y^2 - 2x - 6y + 6 = 0$  is the chord of another circle C having centre (2, 1). The radius of the circle C is (a)  $\sqrt{3}$  (b) 2 (c) 3 (d) 1 **T** 2004 ] (54) If the system of equations 2x - y - z = 2, x - 2y + z = 4 and has no solution, then  $\lambda$  is equal to (a) -2 (b) 3 (c) 0 (d) -3 [IIT 2004] (55) The point at which the line  $2x + \sqrt{6}y = 2$  touches the curve  $x^2 - 2y^2 = 4$  is (a)  $(4, -\sqrt{6})$  (b)  $(\sqrt{6}, 1)$  (c)  $\begin{pmatrix} 1 & 1 \\ 2 & 1 \\ 2 & 6 \end{pmatrix}$  (d)  $(\frac{\pi}{6}, \pi)$ [IIT 2004] (56) Locus of mid-points of segments of tangents to ellipse  $x^2 + 2y^2 = 2$  intercepted between the axes is (a)  $\frac{1}{2x^2} + \frac{1}{4y^2} = 1$  (b)  $\frac{1}{4x^2} + \frac{1}{2y^2} = 1$ (c)  $\frac{x^2}{2} + \frac{y^2}{4} = 1$  (d)  $\frac{x^2}{4} + \frac{y^2}{2} = 1$ [IIT 2004] (57) Orthocentre of triangle whose vertices are (0, 0), (3, 4) and (4, 0) is  $(3, \frac{7}{3})$  (b)  $(3, \frac{5}{4})$  (c) (5, -2) (d)  $(3, (3, \frac{3}{4}))$ [IIT 2003] ( $\alpha < \frac{\pi}{2}$ ) Which one of the following is independent of  $\alpha$  in the hyperbola ( $0 < \alpha < \frac{\pi}{2}$ )  $\frac{x^2}{\cos^2 \alpha} - \frac{y^2}{\sin^2 \alpha} = 1$ (a) eccentricity (b) abscissa of foci (c) directrix (d) vertex [IIT 2003] (59) The focal chord of  $y^2 = 16x$  is a tangent to the curve  $(x - 6)^2 + y^2 = 2$ , then the possible values of the slope of this chord are



- (65) If the tangent at the point P on the circle  $x^2 + y^2 + 6x + 6y = 2$  meets the straight line 5x - 2y + 6 = 0 at a point Q on the Y-axis, then the length of PQ is
  - (a) 4 (b)  $2\sqrt{5}$  (c) 5 (d)  $3\sqrt{5}$  [IIT 2002]

(66) A straight line through the origin O meets the parallel lines 4x + 2v = 9 and 2x + y + 6 = 0 at points P and Q respectively. Then the point O divides the segment PQ in the ratio (a) 1:2 (b) 3:4 (c) 2:1 (d) 4:3 [ IIT 2002 ] (67) If a > 2b > 0, then the positive value of m for which  $y = mx - b\sqrt{1 + m^2}$ common tangent to  $x^2 + y^2 = b^2$  and  $(x - a)^2 + y^2 = b^2$  is is a (a)  $\frac{2b}{\sqrt{a^2 - 4b^2}}$  (b)  $\frac{\sqrt{a^2 - 4b^2}}{2b}$  (c)  $\frac{2b}{a - 2b}$  (d)  $\frac{b}{a - 2b}$ [IIT 2002] (68) The locus of the mid-point of the line segment joining the focus to a moving point on the parabola  $y^2 = 4ax$  is another parabola with directrix (a) x = -a (b)  $x = -\frac{a}{2}$  (c) x = 0 (d)  $x = \frac{a}{2}$ [IIT 2002] (69) The equation of the common tangent to the curves  $y^2 = 8x$  and xy = -1 is (a) 3y = 9x + 2 (b) y = 2x + 1 (c) 2y = x + 8 (d) y = x + 2 [IIT 2002] (70) The number of values of k for which the system of equations (k + 1)x + 8y = 4kand kx + (k + 3)y = 3k - 1 has infinitely many solutions is (b) 1 (c) 2 (d) infinite [IIT 2002] (71) The triangle formed by the tangent to the curve  $f(x) = x^2 + bx - b$  at the point 1) and the co-ordinate axes, lies in the first quadrant. If its area is 2, then the value of b is (a) -1 (b) 3 (c) -3 (d) 1 [IIT 2001] (72) The equation of the common tangent touching the circle  $(x - 3)^2 + y^2 = 9$  and the parabola  $y^2 = 4x$  above the X-axis is

(a) 
$$\sqrt{3} y = 3x + 1$$
 (b)  $\sqrt{3} y = -(x + 3)$   
(c)  $\sqrt{3} y = (x + 3)$  (d)  $\sqrt{3} y = -(3x + 1)$  [IIT 2001]



(79) Let PS be the median of the triangle with vertices P(2, 2), Q(6, -1) and R(7, 3). The equation of the line passing through (1, -1) and parallel to PS is

(a) 2x - 9y = 7	(b) 2x - 9y = 11	
(c) 2x + 9y = 11	(d) 2x + 9y = -7	[IIT 2000]

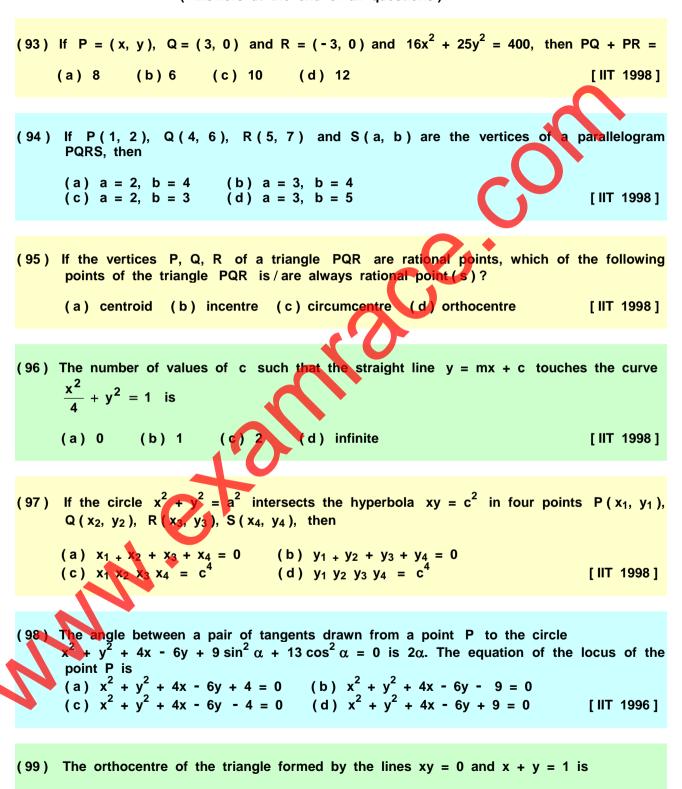
- (80) The incentre of the triangle with vertices (1,  $\sqrt{3}$ ), (0, 0) and (2, 0) is (a)  $\left(1, \frac{\sqrt{3}}{2}\right)$  (b)  $\left(\frac{2}{3}, \frac{1}{\sqrt{3}}\right)$  (c)  $\left(\frac{2}{3}, \frac{\sqrt{3}}{2}\right)$  (d)  $\left(1, \frac{1}{\sqrt{3}}\right)$  [HT 2000] (81) If the circles  $x^2 + y^2 + 2x + 2ky + 6 = 0$  and  $x^2 + y^2 + 2ky + k = 0$  intersect orthogonally, then k is (a) 2 or  $-\frac{3}{2}$  (b) -2 or  $-\frac{3}{2}$  (c) 2 or  $\frac{3}{2}$  (d) -2 or  $\frac{3}{2}$  [IIT 2000] If the line x - 1 = 0 is the directrix of the parabola  $y^2 - kx + 8 = 0$ , then one of (82) the values of k is (a)  $\frac{1}{8}$  (b) 8 (c) 4 (d)  $\frac{1}{4}$ [IIT 2000] (83) If  $x_1$ ,  $x_2$ ,  $x_3$  as well as  $y_1$ ,  $y_2$ ,  $y_3$  are in G. P. with the same common ratio, then the points  $(x_1, y_1)$ ,  $(x_2, y_2)$  and  $(x_3, y_3)$ (a) lie on a straight line
  (b) lie on an ellipse
  (c) lie on a circle
  (d) are vertices of a triangle [IIT 1999] (84) The curve described parametrically by  $x = t^2 + t + 1$ ,  $y = t^2 - t + 1$  represents (a) a pair of straight lines (b) an ellipse (c) a parabola (d) a hyperbo (c) a parabola (d) a hyperbola [IIT 1999] (85) Let P (a sec  $\theta$ , b tan  $\theta$ ) and Q (a sec  $\phi$ , b tan  $\phi$ ), where  $\theta + \phi = \frac{\pi}{2}$ , be two points on the hyperbola  $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ . If (h, k) is the point of intersection of the normals at P and Q, then k is equal to (a)  $\frac{a^2 + b^2}{a}$  (b) -  $\frac{a^2 + b^2}{a}$  (c)  $\frac{a^2 + b^2}{b}$  (d) -  $\frac{a^2 + b^2}{b}$  [IIT 1999] (86) If two distinct chords drawn from the point (p, q) on the circle  $x^2 + y^2 = px + qy$ 
  - (a)  $p^2 = q^2$  (b)  $p^2 = 8q^2$  (c)  $p^2 < 8q^2$  (d)  $p^2 > 8q^2$  [IIT 1999]

(where  $pq \neq 0$ ) are bisected by the X-axis, then

## 11 - TWO DIMENSIONAL GEOMETRY

## (Answers at the end of all questions)

(87) 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 **RS** 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)  $3x^2 - 3y^2 - 8xy - 10x - 15y - 20 = 0$ [ IIT 1999 ] (87) If two distinct chords drawn from the point (p, q) on the circle  $x^2 + y^2$ (where  $pq \neq 0$ ) are bisected by the X-axis, then (a)  $p^2 = q^2$  (b)  $p^2 = 8q^2$  (c)  $p^2 < 8q^2$  (d)  $p^2 > 8q^2$ [IIT 1999] (88) If x = 9 is the chord of contact of the hyperbola  $y^2 - y^2 = 9$ , then the equation of the corresponding pair of tangents is (a)  $9x^2 - 8y^2 + 18x - 9 = 0$ (b)  $9x^2 - 8y^2 - 18x + 9 = 0$ (c)  $9x^2 - 8y^2 - 18x - 9 = 0$ (d)  $9x^2 - 8y^2 + 18x + 9 = 0$ [IIT 1999] (89) Let  $L_1$  be a straight line passing through the origin and  $L_2$  be the straight line x + y = 1. If the intercepts made by the circle  $x^2 + y^2 - x + 3y = 0$  on L<sub>1</sub> and L<sub>2</sub> are equal, then which of the following equations can represent  $L_1$ ? (a) x + y = 0 (b) x - y = 0 (c) x + 7y = 0 (d) x - 7y = 0 [IIT 1999] (90) On the ellipse  $4x^2 + 9y^2 = 1$ , the points at which the tangents are parallel to the line 8x = 9y are  $\left(\frac{2}{5}, \frac{1}{5}\right)$  (b)  $\left(-\frac{2}{5}, \frac{1}{5}\right)$  (c)  $\left(-\frac{2}{5}, -\frac{1}{5}\right)$  (d)  $\left(\frac{2}{5}, -\frac{1}{5}\right)$  [IIT 1999] If the diagonals of a parallelogram PQRS are along the lines x + 3y = 4 and 6x - 2y = 7, then PQRS must be a (a) rectangle (b) square (c) cyclic quadrilateral (d) rhombus [IIT 1998] (92) The number of common tangents to the circles  $x^2 + y^2 - 6x - 8y = 24$  and  $x^{2} + y^{2} = 4$  is (a) 0 (b) 1 (c) 3 (d) 4 [IIT 1998]



(a) 
$$\left(\frac{1}{2}, \frac{1}{2}\right)$$
 (b)  $\left(\frac{1}{3}, \frac{1}{3}\right)$  (c) (0, 0) (d)  $\left(\frac{1}{4}, \frac{1}{4}\right)$  [IIT 1995]

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(100) The radius of the circle passing through the foci of the ellipse  $\frac{x^2}{16} + \frac{y^2}{9} = 1$  and having its centre at (0, 3) is (a) 4 (b) 3 (c)  $\sqrt{12}$  (d)  $\frac{7}{2}$ IIT 1995 ] (101) Consider a circle with its centre lying on the focus of the parabola  $y^2 = 2px$  such that it touches the directrix of the parabola. Then a point of intersection of the circle and the parabola is (a)  $\left(\frac{p}{2}, p\right)$  (b)  $\left(\frac{p}{2}, -p\right)$  (c)  $\left(-\frac{p}{2}, p\right)$  (d)  $\left(-\frac{p}{2}, -p\right)$ [IIT 1995] (102) The locus of the centre of a circle which roughes externally the circle  $x^2 + y^2 - 6x$ - 6y + 14 = 0 and also touches the Y-axis is given by the equation (a)  $x^2 - 6x - 10y + 14 = 0$ (c)  $y^2 - 6x - 10y + 14 = 0$ (d)  $y^2 - 10x - 6y + 14 = 0$ (d)  $y^2 - 10x - 6y + 14 = 0$ [ IIT 1993 ] (103) The centre of a circle passing through the points (0, 0), (1, 0) and touching the circle  $x^2 + y^2 = 9$  is (a)  $\left(\frac{3}{2}, \frac{1}{2}\right)$  (b)  $\left(\frac{1}{2}, \frac{3}{2}\right)$  (c)  $\left(\frac{1}{2}, \frac{1}{2}\right)$  (d)  $\left(\frac{1}{2}, -2^{\frac{1}{2}}\right)$ [ IIT 1992 ] (104) If the sum of the distances of a point from two perpendicular lines is 1, then its locus is (a) square (b) circle (c) straight line (d) two intersecting lines [IIT 1992]

(105) Line L has intercepts a and b on the co-ordinate axes. When the axes are rotated through a given angle, keeping the origin fixed, the same line has intercepts p and q. Then

(a) 
$$a^{2} + b^{2} = p^{2} + q^{2}$$
 (b)  $\frac{1}{a^{2}} + \frac{1}{b^{2}} = \frac{1}{p^{2}} + \frac{1}{q^{2}}$   
(c)  $a^{2} + p^{2} = b^{2} + q^{2}$  (b)  $\frac{1}{a^{2}} + \frac{1}{p^{2}} = \frac{1}{b^{2}} + \frac{1}{q^{2}}$  [IIT 1990]

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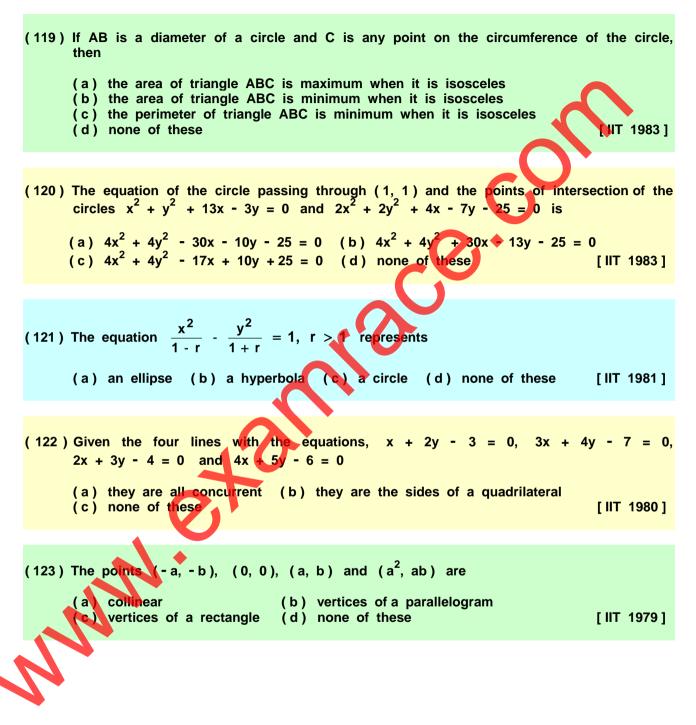
(106) If the two circles 
$$(x - 1)^2 + (y - 3)^2 = r^2$$
 and  $x^2 + y^2 - 8x + 2y + 8 = 0$  intersect  
in two distinct points, then  
(a)  $2 < r < 8$  (b)  $r < 2$  (c)  $r = 2$  (d)  $r > 2$  HIT 1989]  
(107) The lines  $2x - y = 5$  and  $3x - 4y = 7$  are diameters of a circle of yrea 154 sq.  
units, then the equation of this circle is  
(a)  $x^2 + y^2 + 2x - 2y = 62$  (b)  $x^2 + y^2 + 2x - 2y = 67$  [IIT 1989]  
(108) Let  $g(x)$  be a function defined on  $(-1, 1)$ . If the area of the equilateral triangle with  
two of its vertices at  $(0, 0)$  and  $[x, g(x)]$  is  $\sqrt{\frac{1}{2}}$ , then the function  $g(x)$  is  
(a)  $g(x) = \pm \sqrt{1 - x^2}$  (b)  $-g(x) = \sqrt{1 - x^2}$  [IIT 1989]  
(109) If  $P = (1, 0)$ ,  $Q = (-1, 4)$  and  $R = (2, 0)$  are three given points, then the locus  
of the point S satisfying the relation  $SQ^2 + SR^2 = 2SP^2$ , is  
(a) a straight line parallel to X-axis (b) a circle passing through the origin  
(c) a circle with the point eat the origin  
(d) a straight line parallel to Y-axis [IIT 1988]  
(110) If a circle passes through the point (a, b) and cuts the circle  $x^2 + y^2 = k^2$   
archingonally, then the equation of the locus of its centre is  
(a)  $2ax + 2by - (a^2 + b^2 - k^2) = 0$   
(b)  $2ax + 2by - (a^2 + b^2 - k^2) = 0$   
(c)  $x^2 + y^2 - 3ax - 4by + (a^2 + b^2 - k^2) = 0$   
(d)  $x^2 + y^2 - 2ax - 3by + (a^2 - b^2 - k^2) = 0$  [IIT 1988]

(111) The equation of the tangents drawn from the origin to the circle  $x^2 + y^2 - 2rx - 2hy + h^2 = 0$ , are

(a) 
$$x = 0$$
 (b)  $(h^2 - r^2)x - 2rhy = 0$   
(c)  $y = 0$  (d)  $(h^2 - r^2)x + 2rhy = 0$  [IIT 1988]

## 11 - TWO DIMENSIONAL GEOMETRY Page 18 (Answers at the end of all questions) (112) If the line ax + by + c = 0 is a normal to the curve xy = 1, then (a) a > 0, b > 0 (b) a > 0, b < 0</li> (c) a < 0, b > 0 (d) a < 0, b < 0</li> (e) none of these UT 1986] (113) The points $\left(0, \frac{8}{3}\right)$ , (1, 3) and (82, 30) are vertices of (a) an obtuse angled triangle (b) an acute angled triangle (c) a right angled triangle (d) an isosceles triangle (e) none of these [IIT 1986] (114) All points lying inside the triangle formed by the points (1, 3), (5, 0) and (-1, 2) satisfy (a) $3x + 2y \ge 0$ (b) $2x + y - 13 \ge 0$ (c) $2x - 3y - 12 \le 0$ (d) $-2x + y \ge 0$ (e) none of these [IIT 1986] (115) Three lines px + qy + r = 0, qx + ry + p = 0 and rx + py + q = 0 are concurrent if (a) p + q + r = 0(c) $p^{3} + q^{3} + r^{3} = 3pqr$ (b) $p^{2} + q^{2} + r^{2} = pq + qr + rp$ (d) none of these [IIT 1985] (116) The locus of the midpoints of a chord of the circle $x^2 + y^2 = 4$ which subtends a right angle at the origin is 2 (b) $x^2 + y^2 = 1$ (c) $x^2 + y^2 = 2$ (d) x + y = 1 [IIT 1984] The centre of the circle passing through the point (0, 1) and touching the curve $y = x^2$ at (2, 4) is (a) $\left(\frac{-16}{5}, \frac{27}{10}\right)$ (b) $\left(\frac{-16}{7}, \frac{53}{10}\right)$ (c) $\left(\frac{-16}{5}, \frac{53}{10}\right)$ (d) none of these [IIT 1983] (118) The straight line x + y = 0, 3x + y - 4 = 0, x + 3y - 4 = 0 form a triangle which is

(a) isosceles (b) right angled (c) equilateral (d) none of these [IIT 1983] (Answers at the end of all questions)



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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
а	а	а	d	С	С	b	d	d	а	d	а	d	С	d	b	а	а	а	a
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
b	d	d	d	С	С	d	d	С	а	С	а	С	С	С	d	а	d	С	d
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	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	6
С	а	а	b	b	b	а	а	b	а	b	С	С	a	a	а	d	b	а	а
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	8
b	а	а	С	С	b	а	С	d	b	С	C	а	b	d	d	b	С	d	C
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81	82	83	84	85	86	87	88	89	90	91				96	97		98	9	
С	C	а	С	d	d	b	b	a, c	b, d	d	b	С	С	а	С	a,t	o,c,d	d	C
								2				<u>.</u>							
100		01	102		03	104	10		106	107		08	109	11	0	111	11	2	113
С	a	,b	d		d	а	b		d	С	a,	b,c	d	a	3	a,b	b,	C	е
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114			116	117	118					22	123			_					
a,b,c	a,	o,c	С	С	a	a	k		d	С	а								
					<b>U</b>														

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