Chapter

4

INTRODUCTION TO ANALYTIC GEOMETRY

OBJECTIVE

(1) If distance between (a, 5) & (1, 3) is $\sqrt{2a+1}$ then a = ____ ***(Lahore Board 2009)***

(a) 4 (b) 2

(c) $\sqrt{2}$ (d) 1

(2) The angle between the lines $\frac{x}{\sqrt{3}} + y = 1$ and $\frac{x}{\sqrt{3}} - y = 1$ is _ ***(Lahore Board 2009)***

(a) 30^o (b) 45^o

(c) 60^o (d) 90^o

(3) If θ is the angle between the lines represented by the ***(Lahore Board 2009)***

(a) $\tan\theta = \frac{\sqrt{h^2 - ab}}{a+b}$ (b) $\tan\theta = \frac{2\sqrt{h^2 - ab}}{a+b}$

(c) $\tan\theta = \frac{2\sqrt{h^2 + ab}}{a+b}$ (d) none

(4) The point which divides segment joining points (a, b) & (c, d) in the ratio 2:3 internally is _____ ***(Lahore Board 2009)***

(a) $\left(\frac{3a+2c}{5}, \frac{2d+3b}{5}\right)$ (b) $\left(\frac{3a-2c}{5}, \frac{2d-3b}{5}\right)$

(c) $\left(\frac{3a+2b}{5}, \frac{2d+3b}{5}\right)$ (d) none

(5) The angle between the lines $(2-\sqrt{3})y = x + 5$ $(2-\sqrt{3})$ and $(2+\sqrt{3})\,y = x - 7$ $(2+\sqrt{3})$ is _____ ***(Lahore Board 2009)***

(a) 30^o (b) 45^o

(c) 60^o (d) 90^o

(6) The lines represented by $ax^2 + 2bxy + by^2 = 0$ are parallel if ***(Lahore Board 2009)***

(a) $h^2 - ab > 0$ (b) $h^2 - ab < 0$

(c) $h^2 - ab = 0$ (d) none of these

(7) If the distance of the point (5, b) from x – axis is 3 then b = _____

(a) 5 (b) 0

(c) 3 (d) b – 3

(8) If m is slope of line passing through origin then its equation is _____

(a) $y = x$ (b) $y = -x$

(c) $y = mx$ (d) $y = mx + c$

(9) The distance of the point (– 1, 2) from x-axis is _____

(a) – 1 (b) 2

(c) 0 (d) 1

(10) The lines ℓ_1, ℓ_2 with slopes m_1, m_2 are parallel if m_1 = ___ ***(Gujranwala Board 2006)***

(a) m_2 (b) ∞

(c) m_1 (d) 0

(11) Ordinate of a point P is the _____ coordinate of point P.

(a) x (b) y

(c) z (d) none of these

(12) The lines represented by $ax^2 + 2hxy + by^2 = 0$ are perpendicular.

(a) $a < b$ (b) $a > b$

(c) $a = -b$ (d) none of these

(13) The lines through the origin represented by $ax^2 + 2hxy + by^2 = 0$ are real and distinct if _____ ***(Gujranwala Board 2006)***

(a) $h^2 + ab = 0$ (b) $h^2 - ab < 0$

(c) $h^2 - ab > 0$ (d) $h^2 = ab$

(14) Normal form of equation of straight line is _____

(a) $y = mx + c$ (b) $y - y_1 = m(x - x_1)$

(c) $\frac{x}{a} + \frac{y}{b} = 1$ (d) $x \cos\alpha + y \sin\alpha = p$

(15) The pair of lines $ax^2 + 2hxy + by^2 = 0$ are orthogonal if ***(Lahore Board 2011)***

(a) $a + b > 0$ (b) $h^2 - ab < 0$

(c) $a + b = 0$ (d) $h^2 - ab = 0$

(16) The ratio in which y-axis divides the line joining points $(2, -3)$ & $(-5, 6)$ is _____ ***(Gujranwala Board 2007) (Lahore Board 2013)***

(a) 1 : 1 (b) 1 : 2

(c) 2 : 5 (d) 5 : 2

(17) If lines $(3x - y + 5) + k(2x - 3y - 4) = 0$ are parallel to y – axis, then k = _____ ***(Gujranwala Board 2007)***

(a) $-\frac{1}{3}$ (b) $-\frac{1}{4}$

(c) $-\frac{1}{5}$ (d) 0

(18) Slope of line through the points $(3, 2)$ & $(-5, b)$ is $\frac{9}{8}$ then b = ____

(a) 1 (b) – 7

(c) 0 (d) ∞

(19) The point of concurrency of the medians of a triangle is called _____ ***(Lahore Board 2008, 2011, 2014)***

(a) centroid (b) circum centre

(c) in centre (d) orthocentre

(20) The point of concurrency of altitudes of triangle called _____

(a) centroid (b) circum centre

(c) in centre (d) ortho centre

(21) The point of intersection of right bisectors of a triangle called _____

(a) centroid (b) circum centre

(c) in-centre (d) ortho center

(22) General form of equation of line is _____ ***(Lahore Board 2006)***

(a) $x + y + c = 0$ (b) $ax + by + c = 0$

(c) $ax + y = c$ (d) none

(23) The equation of y-axis is _____

(a) $y = 0$ (b) $x = y$

(c) $y = \infty$ (d) $x = 0$

(24) The equation of x – axis is _____

(a) $y = 0$ (b) $x = y$

(c) $y = \infty$ (d) $x = 0$

(25) If (3, 1) & (5, 1) are the end points of diameter of a circle then coordinates of its center are _____

(a) (0, 0) (b) (4, 1)

(c) (8, 2) (d) (– 2, 1)

(26) The point $P(x_1, y_1)$ lies _____ the line $ax + by + c = 0$ if $ax_1 + by_1 + c < 0$

(a) above (b) on

(c) below (d) none of these

(27) The point $P(x_1, y_1)$ lies _____ the line $ax + by + c = 0$ if $ax_1 + by_1 + c = 0$

(a) above (b) on

(c) below (d) none of these

(28) The point $P(x_1, y_1)$ lies above the line $ax + by + c = 0$ if $ax_1 + by + c$ _____ 0

(a) = (b) <

(c) > (d) none of these

(29) If m_1, m_2 are slopes of perpendicular lines, $m_1 m_2$ = _____ ***(Lahore Board 2006)***

(a) 0 (b) 1

(c) – 1 (d) none of these

(30) If $\alpha = 0^\circ$, then ℓ is _____ to x-axis.

(a) parallel (b) perpendicular

(c) non vertical (d) none of these

(31) If $\alpha = 90^\circ$, then ℓ is _____ x-axis.

(a) parallel (b) perpendicular

(c) non-vertical (d) none of these

(32) If α is inclination then slope = _____

(a) $\tan \alpha$ (b) $\sin \alpha$

(c) $\cos \alpha$ (d) none of these

(33) If three lines are concurrent then their point of intersion is called _____

(a) center (b) in center

(c) circum center (d) point of concurrency

(34) The distance of the point (3, 7) from x-axis is _____ ***(Lahore Board 2012)***

(a) 3 (b) 7

(c) 4 (d) 10

(35) The distance of the point (–3, –7) from x-axis is

(a) – 3 (b) – 7

(c) 7 (d) – 10

(36) The two lines $a_1x + b_1y + c_1 = 0$ & $a_2x + b_2y + c_2 = 0$ are parallel if

(a) $\frac{a_1}{a_2} = \frac{b_1}{b_2}$ (b) $\frac{a_1}{b_1} = \frac{-a_2}{b_2}$

(c) $\frac{b_1}{c_2} = \frac{b_2}{c_2}$ (d) $\frac{a_1}{c_1} = \frac{a_2}{c_2}$

(37) Every homogenous equation of 2nd degree $ax^2 + 2hxy + by^2 = 0$ represents two straight lines _____ ***(Lahore Board 2010)***

(a) through origin (b) not through origin

(c) two parallel lines (d) none of these

(38) Slope of y-axis is _____

(a) 0 (b) 1

(c) – 1 (d) ∞

(39) Slope of x-axis is _____

(a) 0 (b) 1

(c) – 1 (d) ∞

(40) Congurent chords of a circle are equidistant from its _____

(a) diameter (b) radius

(c) center (d) none of these

(41) Lines lie on the some plane called _____

(a) collinear (b) coplanar

(c) perpendicular (d) parallel

(42) If $\alpha = 30^\circ$ then slope is

(a) $\sqrt{3}$ (b) $\frac{1}{\sqrt{3}}$

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

(43) The point (10, – 10) is at a distance of _____ units from origin.

(a) 20 (b) 12

(c) 15 (d) $10\sqrt{2}$

(44) Length of perpendicular from origin to the line $4x + 3y = 1$ is

(a) 0 (b) -2

(c) $\frac{13}{3}$ (d) $\frac{1}{5}$

(45) If $a = 0$, then $ax + by + c = 0$ is _____ ***(Lahore Board 2008)***

(a) parallel to ax-axis (b) parallel to y-axis

(c) bisecting 1^{st} & 3^{rd} quad (d) none

(46) The coordinates of the point where line $2x + 4y = 8$ cuts x-axis are

(a) (0, 0) (b) (4, 0)

(c) (0, 2) (d) (0, 8)

(47) Inclination of any line parallel to x-axis is _____ ***(Lahore Board 2011)***

(a) 0 (b) $\frac{\pi}{2}$

(c) $\frac{3\pi}{2}$ (d) $\frac{\pi}{4}$

(48) Inclination of any line parallel to y-axis is _____

(a) 0 (b) $\frac{\pi}{2}$

(c) $\frac{3\pi}{2}$ (d) $\frac{\pi}{4}$

(49) Distance of point $(-7, 13)$ from line $2x + y + 13 = 0$ is _____

(a) $\frac{6}{\sqrt{109}}$ (b) 56

(c) 67 (d) none of these

(50) If the origin is shifted to $(-4, -6)$ then point $(-6, -8)$ will shifted into ____

(a) $(-2, 1)$ (b) $(-2, -2)$

(c) $(0, -2)$ (d) $(2, 2)$

(51) The point of concurrency of angle bisectors of a triangle called ____ ***(Lahore Board 2012)***

(a) In-center (b) centroid

(c) circumcenter (d) ortho center

(52) In rotation of axes origin is _____

(a) shifted (b) translated

(c) rotated (d) unchanged

(53) In translation of axes, origin is shifted but axes remain _____ to the old axes.

(a) perpendicular (b) parallel

(c) collinear (d) co-plane

(54) The distance between $x + 2y - 5 = 0$ and $2x + 4y = 1$ is _____

(a) 6 (b) $\frac{4}{\sqrt{5}}$

(c) $\frac{9}{2\sqrt{5}}$ (d) $\frac{11}{2\sqrt{5}}$

(55) A joint equation of lines through the origin and perpendicular to the lines $x^2 - 2xy \tan\alpha - y^2 = 0$ is _____

(a) $x^2 + 2xy \tan\alpha - y^2$ (b) $x^2 - 2xy \tan\alpha - y^2 = 0$

(c) $x^2 + 2xy \tan\alpha + y^2 = 0$ (d) $x^2 - 2xy \tan\alpha + y^2 = 0$

(56) Which of the following points are at a distance of 15 units from origin.

(a) $(\sqrt{176}, 7)$ (b) $(10, -10)$

(c) $(1, 15)$ (d) $\left(\frac{15}{2}, \frac{15}{2}\right)$

(57) If P divides the line segment AB in ratio externally, then

(a) $\left(\frac{k_1x_2 + k_2x_1}{k_1 + k_2}, \frac{k_1y_2 + k_2y_1}{k_1 + k_2}\right)$ (b) $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

(c) $\left(\frac{k_1x_2 - k_2x_1}{k_1 - k_2}, \frac{k_1y_2 - k_2y_1}{k_1 - k_2}\right)$ (d) none of these

(58) The centroid divides the medians in ratio

(a) 1 : 1 (b) 2 : 1

(c) 1 : 2 (d) $k_1 : k_2$

(59) Intercepts form of $ax + by + c = 0$ is _____

(a) $\frac{x}{a} + \frac{y}{b} = 1$ (b) $\frac{x}{\frac{-c}{a}} + \frac{y}{\frac{-c}{b}} = 1$

(c) $y = \frac{-a}{b}x - \frac{c}{b}$

(d) $\pm\frac{a}{\sqrt{a^2+b^2}}x\pm\frac{b}{\sqrt{a^2+b^2}}\ y = \pm\frac{c}{\sqrt{a^2+b^2}}$

(60) The distance of $\frac{x}{3} - \frac{y}{4} = 1$ from origin is _____

(a) $\frac{12}{5}$ (b) $\frac{5}{12}$

(c) 1 (d) 7

(61) The straight lines represented by $ax^2 + 2hxy + by^2 = 0$ interest at _____

(a) (1, 1) (b) (0, 1)

(c) (1, 0) (d) (0, 0)

(62) Equation of line through origin and parallel to $\frac{x}{a} + \frac{y}{b} = 1$ is

(a) $\frac{x}{a} + \frac{y}{b} = 1$ (b) $\frac{x}{a} + \frac{y}{b} = 2$

(c) $\frac{x}{a} + \frac{y}{b} = 0$ (d) $\frac{x}{b} + \frac{y}{a} = 0$

(63) $\frac{x - x_1}{\cos\alpha} = \frac{y - y_1}{\sin\alpha} = r$ is known as _____

(a) intercepts form (b) point slope form

(c) symmetric form (d) normal form

(64) The equation $-x^2 + 2\sec\theta\ xy + y^2 = 0$ represents lines which

(a) coincident (b) parallel

(c) perpendicular (d) none of these

(65) The centroid of triangle having vertices A(–2, 3), B (– 4, 1) and C(3, 5) is _____

(Lahore Board 2014)

(a) (– 1, – 1) (b) (0, 0)

(c) (3, – 1) (d) (– 1, 3)

(66) Which of the following is 2nd degree homogenous equation.

(a) $x^2 + y^2 = 7$ (b) $xy = 0$

(c) $x^2 + x = 0$ (d) $x^2 + 7 = 0$

(67) Lines $x^2 - 3xy + 6y^2 = 0$ passes through _____

(a) I & II Quad (b) II Quad

(c) Origin (d) none of these

(68) Two lines $xy + x^2 + y^2 = 0$ are _____

(a) real & distinct (b) real and coincident
(c) imaginary (d) none of these

(69) If lines $2x - 3y - 1 = 0$, $3x - y - 5 = 0$ and $3x + \alpha y + 8 = 0$ are concurrent then $\alpha =$ _____
(a) 0 (b) -14
(c) 14 (d) 7

(70) The joint equation of $x = 2y$ and $x = -3y$ is _____
(a) $x^2 + 6xy = 0$ (b) $6x^2 - xy + y^2 = 0$
(c) $x^2 + xy - 6y^2 = 0$ (d) $-6y^2 + x^2 = 0$

(71) The line bisecting I & III Quad has equation. ***(Gujranwala Board 2010)***
(a) $x = -y$ (b) $x = 0$
(c) $x = y$ (d) $y = 0$

(72) The line having equation $ax = b$ $a, b \neq 0$ is _____
(a) horizontal (b) vertical
(c) oblique (d) through origin

(73) The line bisecting II & IV Quad has equation _____
(a) $x = -y$ (b) $x = 0$
(c) $x = y$ (d) $y = 0$

(74) Y-intercept of the line $3x - 2y + 8 = 0$ is _____
(a) 3 (b) -2
(c) 4 (d) $\frac{-8}{3}$

(75) Slope of line perpendicular to the line $bx + ay + c = 0$ is _____
(a) $\frac{-a}{b}$ (b) $\frac{-b}{a}$
(c) $\frac{a}{b}$ (d) $\frac{b}{a}$

(76) Which of the following points does not lie on line $3x - 4y = 24$.
(a) $(8, 0)$ (b) $(0, -6)$
(c) $(4, -3)$ (d) $(3, -4)$

(77) _____ lines pass through one point.
(a) 1 (b) 2
(c) infinite (d) no line

(78) If slope of AB = Slope of BC, then points A, B, C are _____

(a) collinear (b) coplanar
(c) concurrent (d) none of these

(79) If lines are parallel then solution is _____
(a) {(0, 0)} (b) {(1, 1)}
(c) {(0, 1)} (d) does not exist

(80) Distance between lines $2x - 5y + 13 = 0$; $2x - 5y + 6 = 0$ is
(a) zero (b) $\sqrt{29}$
(c) 7 (d) $\frac{7}{\sqrt{29}}$

(81) Area of Trapezium = _____
(a) length × breadth
(b) $\frac{1}{2}$ (sum of parallel sides) (sum between parallel sides)
(c) $\frac{1}{2}$ (sum of parallel sides) (difference between parallel sides)
(d) None of these

(82) Measure of angle between lines $x^2 - xy - 6y^2 = 0$ is
(a) 0° (b) 30°
(c) 120° (d) 135°

(83) The equation of line whose inclination is 120° and passes through $(0, -4)$ is ____
(a) $y = \sqrt{3}\,x - 4$ (b) $y = -\sqrt{3}\,x - 4$
(c) $x = \sqrt{3}\,y$ (d) $y = 4x - \sqrt{3}$

(84) For what value of k, lines $2x - 3y - 1 = 0$, $3x - y - 1 = 0$ and $3x + ky + 2 = 0$ meet at a point.
(a) 14 (b) 20
(c) – 16 (d) – 14

(85) Coordinates of point that divides the joint of A(– 6, 3) & B(5, – 2) in ratio 2:3 externally _____
(a) (– 28, 13) (b) $(\frac{-8}{5}, 1)$
(c) (0, 0) (d) none of these

(86) Centroid of Triangle with vertices A(2, 1), B(–1, 3) & C(–1, – 4) is

(Lahore Board 2013)

(a) (3, 1) (b) (0, 0)

(c) (2, 2) (d) (– 2, – 5)

(87) When a line intersects the y-axis at (0, 4) then y – intercept is

(Lahore Board 2013)

(a) 4 (b) 2

(c) 0 (d) 6

(88) Slope of line perpendicular to line $2x - 3y + 1 = 0$ is equal to

(a) + 3/2 (b) – 3/2

(c) 2/3 (d) – 2/3

(89) For any point (x, y) on x-axis;

(a) $y = 0$ (b) $y = -1$

(c) $y = 1$ (d) $y = 2$

[redacted]

1.	*b*	*2.*	*c*	*3.*	*b*	*4.*	*a*	*5.*	*c*	*6.*	*c*
7.	*c*	*8.*	*c*	*9.*	*b*	*10.*	*a*	*11.*	*b*	*12.*	*c*
13.	*c*	*14.*	*d*	*15.*	*c*	*16.*	*c*	*17.*	*a*	*18.*	*b*
19.	*a*	*20.*	*d*	*21.*	*b*	*22.*	*b*	*23.*	*d*	*24.*	*a*
25.	*b*	*26.*	*c*	*27.*	*b*	*28.*	*c*	*29.*	*c*	*30.*	*a*
31.	*b*	*32.*	*a*	*33.*	*d*	*34.*	*b*	*35.*	*c*	*36.*	*a*
37.	*a*	*38.*	*d*	*39.*	*a*	*40.*	*c*	*41.*	*b*	*42.*	*b*
43.	*d*	*44.*	*d*	*45.*	*a*	*46.*	*b*	*47.*	*a*	*48.*	*b*
49.	*d*	*50.*	*b*	*51.*	*a*	*52.*	*d*	*53.*	*b*	*54.*	*b*
55.	*b*	*56.*	*a*	*57.*	*c*	*58.*	*b*	*59.*	*b*	*60.*	*a*
61.	*d*	*62.*	*c*	*63.*	*c*	*64.*	*c*	*65.*	*d*	*66.*	*b*
67.	*c*	*68.*	*c*	*69.*	*b*	*70.*	*c*	*71.*	*c*	*72.*	*b*
73.	*a*	*74.*	*c*	*75.*	*c*	*76.*	*d*	*77.*	*c*	*78.*	*a*
79.	*d*	*80.*	*d*	*81.*	*c*	*82.*	*d*	*83.*	*b*	*84.*	*b*
85.	*a*	*86.*	*b*	*87.*	*a*	*88.*	*b*	*89.*	*a*		