ASSIGNMENT CLASS XI STRAIGHT LINE AND CONIC SECTION

1 If the equation $3x^2 + xy - y^2 - 3x + 6y + K = 0$ represents pair of lines, then the value of K is

(a) 9 (b) 1
(c) - 9 (d) 0

2 The vertices of a triangle are (0, 0), (3, 0) and (0, 4). Its orthocenter is at

(a) (0, 0) (b) $\left(1, \frac{3}{4}\right)$
(a) $\left(\frac{3}{2}, 2\right)$ (d) None of these

3. The reflection of the point (6, 8) in the line $x - y = 0$ is

(a) (6, 8) (b) (-6, 8)
(c) (- 8, - 6) (d) (8, 6)

4 A line passes thro (2, 2) and is perpendicular to the line $3x + y = 3$. Its $y - \text{int}\, ercept$ is

(a) $\frac{1}{3}$ (b) $\frac{2}{3}$
(c) 1 (d) $\frac{4}{3}$

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

(a) 60° (b) 45°
(c) 30° (d) $\tan^{-1}\frac{7}{6}$

6. 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

7. The circumcentre of the triangle formed by A(1, 2), B(-2, 2), C(1, 5) is

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

(c) (1, 5) (d) $\left(-\frac{1}{2},\frac{7}{2}\right)$

8. If the centroid and circumcentre of a triangle are (3, 3), (6,2), then the orthocenter is

(a) (9, 5) (b) (3, -1)

(c) (-3, 1) (d) (.-3, 5)

9. The image (or reflection) of the point (4, -13) in the line $5x+y+6=0$ is

(a) (- 1, - 14) (b) (3, 4)

(c) (1, 2) (d) (- 4, 13)

10. The foot of the perpendicular from (2, 3) upon the line $4x-5y+8=0$ is

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

(c) $\left(\frac{41}{78},\frac{128}{75}\right)$ (d) $\left(\frac{78}{41},\frac{128}{41}\right)$

11. Equation of the circle having diameters $2x-3y=5$ and $3x-4y=7$ and radius 8 is

(a) $x^2+y^2-2x+2y-62=0$ (b) $x^2+y^2+2x+2y-2=0$

(c) $x^2+y^2-2x-2y+62=0$ (d) None of these

12. The number of tangents to the circle $x^2+y^2-8x-6y+9=0$ which passes thro the point

(3, - 2) is

(a) 1 (b) 2

(c) 0 (d) None of these

13. Circles $x^2+y^2-2x-4y=0$ and $x^2+y^2-8y-4=0$

(a) Touch each other externally (b) Touch each other internally

(c) Do not touch each other (d) None of these

14. The length of the tangent from (5, 1) to the circle $x^2+y^2+6x-4y-3=0$ is

(a) 81 (b) 29

(c) 7 (d) 21

15. Two perpendicular tangents to the circle $x^2+y^2=r^2$ meet at P. The locus of P is

(a) $x^2+y^2=2r^2$ (b) $x^2+y^2=4r^2$

(c) $x^2 + y^2 = \frac{r^2}{2}$ (d) $x + y = r$

16. If the circle $x^2 + y^2 + 2x + 2Ky + 6 = 0$ touches

(a) 2 or $-\frac{3}{2}$ (b) - 2 or $-\frac{3}{2}$

(c) 2 or $\frac{3}{2}$ (d) - 2 or $\frac{3}{2}$

17. The angle between the tangents drawn from the origin to the parabola $y^2 = 4a(x-a)$ is

(a) 90° (b) 30°

(c) $\tan^{-1}\frac{1}{2}$ (d) 45°

18. The length of the latus rectum of the parabola $4y^2 + 2x - 20y + 17 = 0$ is

(a) 3 (b) 6

(c) $\frac{1}{2}$ (d) 0

19. The line $y = mx + c$ touches the parabola $x^2 = 4ay$ if

(a) $c = am$ (b) $c = -\frac{a}{m}$

(c) $c = -am^2$ (d) $c = -\frac{a}{m^2}$

20. The tangents at the points $(at_1^2, 2at_1), (at_2^2, 2at_2)$ on the parabola $y^2 = 4ax$ at right angles if

(a) $t_1 t_2 = -1$ (b) $t_1 t_2 = 1$

(c) $t_1 t_2 = 2$ (d) $t_1 t_2 = -2$

21. The equation of the parabola with focus (3,0) and the directrix $x + 3 = 0$ is

(a) $y^2 = 3x$ (b) $y^2 = 2x$

(c) $y^2 = 12x$ (d) $y^2 = 6x$

22. The eccentricity of the curve represented by the equation $x^2 + 2y^2 - 2x + 3y + 2 = 0$ is

(a) 0 (b) $\frac{1}{2}$

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

23. The equations $x = a\cos\theta,\ y = b\sin\theta,\ 0 \le \theta < 2\pi,\ a \ne b,$ represent

(a) An ellipse (b) A parabola
(c) A circle (d) A hyperbola

24. The distance of a focus of the ellipse $9x^2 + 16y^2 = 144$ from an end of the minor axis is

(a) $\frac{3}{2}$ (b) 3
(c) 4 (d) None of these

25. If any tangent to the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ intercepts equal length l on the axis, then $l =$

(a) $\sqrt{a^2 + b^2}$ (b) $a^2 + b^2$
(c) $\left(a^2 + b^2\right)^2$ (d) None of these

26. For the ellipse $x^2 + 4y^2 = 9$

(a) The eccentricity is $\frac{1}{2}$ (b) The latus rectum is $\frac{2}{3}$
(c) A focus is $\left(3\sqrt{3}, 0\right)$ (d) Adirectrix is $x = 2\sqrt{3}$

27. Equation of the tangent to the hyperbola $2x^2 - 3y^2 = 6$ which is parallel to the line $y = 3x + 4$ is

(a) $y = 3x + 6$ (b) $y = 3x - 4$
(c) $y = 3x + 5$ and $y = 3x - 5$ (d) None of these

28. The eccentricity of the conic $x^2 - 2x - 4y^2 = 0$ is

(a) $1/4$ (b) $3/2$
(c) $\frac{\sqrt{5}}{2}$ (d) $\sqrt{5/4}$

29. Number of Normals drawn from a point to the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ is

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

30. The foci of the hyperbola $2x^2 - 3y^2 = 5$ is

(a) $\left(\pm\frac{5}{\sqrt{6}}, 0\right)$ (b) $\left(\pm\frac{5}{6}, 0\right)$

(c) $\left(\begin{matrix} + \\ - \end{matrix} \frac{\sqrt{5}}{6}, 0 \right)$

(d) None of these