HYPERBOLA

1. If e, e′ are the eccentricities of hyperbolas $\frac{x^2}{a^2}-\frac{y^2}{b^2}=1$ and $\frac{y^2}{b^2}-\frac{x^2}{a^2}=1$, then

(A) e = e′ (B) e = –e′

(C) e e′ = 1 (D) $\frac{1}{e^2}+\frac{1}{e'^2}=1$

2. Centre of the hyperbola $x^2 + 4y^2 + 6xy + 8x - 2y + 7 = 0$ is ,

(A) (1, 1) (B) (0, 2)

(C) (2, 0) (D) none of these .

3. The eccentricity of the hyperbola $2x^2 - y^2 = 6$ is

(A) $\sqrt{2}$ (B) 2

(C) 3 (D) $\sqrt{3}$

4. The radius of the director circle of the hyperbola $\frac{x^2}{a^2}-\frac{y^2}{b^2}=1$ is

(A) a –b (B) $\sqrt{a-b}$

(C) $\sqrt{a^2-b^2}$ (D) $\sqrt{a^2+b^2}$

5. The tangent to the curve $x = a(\theta - \sin\theta)$; $y = a(1 + \cos\theta)$ at the points $\theta = (2k + 1)\pi$, $k \in Z$ are parallel to

(A) y = x (B) y = –x

(C) y = 0 (D) x = 0

6. The legth of latus rectum for hyperbola $\frac{x^2}{16}-\frac{y^2}{9}=1$ is

(A) $\frac{32}{3}$ (B) $\frac{9}{2}$

(C) $\frac{8}{3}$ (D) none of these

7. The straight line $y = 3x + c$ will be tangent to hyperbola $\frac{x^2}{25}-\frac{y^2}{16}=1$ if c^2 is equal to

(A) 119 (B) 225

(C) 209 (D) 144

8. Co–ordinates of the foci of the hyperbola $\frac{(x-1)^2}{9}-\frac{(y-2)^2}{16}=1$ are

(A) (1, 7) and (1, –3) (B) (6, 2) and (–4, 2)

(C) (1, 3) and (1, –7) (D) None of these

9. The eccentricity of the hyperbola passing through (3, 0) and $(3\sqrt{2}, 2)$ and having its axes along the co–ordinate axes is

(A) $\frac{\sqrt{13}}{6}$ (B) $\frac{\sqrt{13}}{2}$

(C) $\frac{\sqrt{13}}{3}$ (D) $\frac{\sqrt{13}}{4}$

10. The centre of the hyperbola $4x^2 - 8x - 5y^2 + 10y = 21$, is

(A) (–1, –1) (B) (1, 1)

(C) (1, 2) (D) (2, 1)

11. Which of the following expressions (t being the parameter) can't represent a hyperbola?

(A) $\frac{tx}{a} + \frac{y}{b} + t = 0;\ \ \frac{x}{a} + \frac{ty}{b} - 1 = 0$

(B) $x = \frac{a}{2}\left(t + \frac{1}{2}\right);\ \ y = \frac{b}{2}\left(t - \frac{1}{t}\right)$

(C) $x = e^t + e^{-t};\ y = e^t - e^{-t}$

(D) $x^2 = 2(\cos t + 3);\ y^2 = 2\left(2\cos^2\frac{t}{2} - 1\right)$

12. Centre of the hyperbola $\frac{(x-1)^2}{4} - y^2 = 1$, is

(A) (0, 1) (B) (1, 0)

(C) (2, 0) (D) (0, 2)

13. Centre of the hyperbola $\frac{(x-1)^2}{4} - \frac{y^2}{16} = 1$ is

(A) (0, 1) (B) (1, 0)

(C) (2, 0) (D) (0, 2)

14. Length of the latus rectum of the hyperbola $xy = c^2$ is

(A) 2 c (B) 4 c

(C) $2\sqrt{2}$ c (D) $\sqrt{2}$ c

15. Co–ordinates of the foci of the hyperbola: $\frac{(x-1)^2}{16} - \frac{(y-1)^2}{9} = 1$

(A) (1, 7) and (1, –3) (B) (1, 3) and (1, –7)

(C) (–6, 2) and (4, 2) (D) (–4, 2) and (6, 2)

16. Eccentricity of the hyperbola: $4x^2 - 8x - 5y^2 + 10y = 21$ is

(A) $\frac{\sqrt{5}}{3}$ (B) $\frac{4}{3}$

(C) $\frac{3}{\sqrt{5}}$ (D) $\frac{3}{4}$

17. Length of latus rectum of the hyperbola: $4x^2 - 8x - 5y^2 + 10y = 21$ is

(A) $\frac{\sqrt{5}}{8}$ (B) $\frac{1}{2}$

(C) 2 (D) $\frac{8}{\sqrt{5}}$

18. Eccentricity of the hyperbola $\frac{(x-1)^2}{9} - \frac{(y-1)^2}{16} = 1$; is

(A) $\frac{5}{4}$ (B) $\frac{5}{3}$

(C) $\frac{4}{3}$ (D) $\frac{3}{2}$

19. Length of latus rectum of the hyperbola; $\frac{(x-1)^2}{9} - \frac{(y-2)^2}{16} = 1$; is

(A) $\frac{9}{2}$ (B) $\frac{9}{4}$

(C) $\frac{7}{4}$ (D) $\frac{32}{2}$

20. Centre of the hyperbola $\frac{(x-y)^2}{4} - \frac{(x+y)^2}{9} = 1$; is

(A) (0, 0) (B) (1, 1)

(C) (1, 1) (D) (–1, –1)

ANSWERS

1.	D	2.	D	3	D	4.	C
5.	C	6.	B	7.	C	8.	B
9.	C	10.	B	11.	D	12.	B
13.	B	14.	C	15.	D	16.	C
17.	D	18.	B	19.	D	20.	A