



## DPP – 3 (Basic Math)

Video Solution on Website:-

<https://physicsaholics.com/home/courseDetails/36>

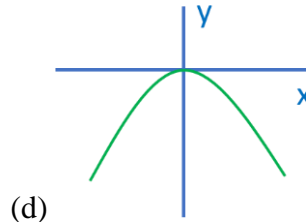
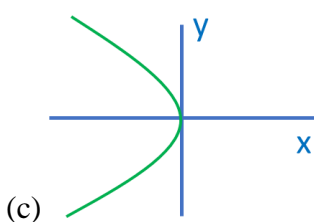
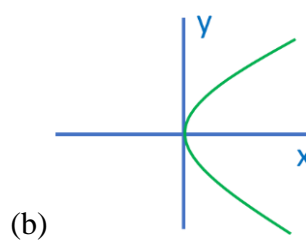
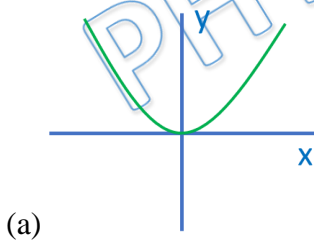
Video Solution on YouTube:-

<https://youtu.be/gboSWA1HIuM>

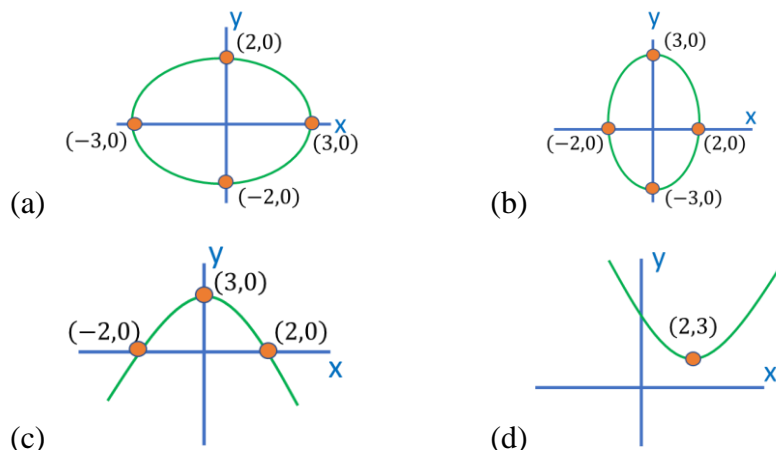
Written Solution on Website:-

<https://physicsaholics.com/note/notesDetails/70>

- Q 1. Distance between foci of ellipse  $\frac{x^2}{25} + \frac{y^2}{9} = 1$  is  
(a) 9 (b) 7 (c) 6 (d) 8
- Q 2. Equation of parabola opening up passing through (3,4) and having vertex at origin is  
(a)  $x = \frac{4}{9} y^2$  (b)  $y = \frac{2}{9} x^2$  (c)  $y = \frac{4}{3} x^2$  (d)  $y = \frac{4}{9} x^2$
- Q 3. Which of the following is an equation of circle:  
(a)  $x^2 + y^2 = 2^2$  (b)  $x^2 y + y^2 = 2^2$  (c)  $xyz + y^2 = 2^2$  (d) None of these
- Q 4. Which of the following is an equation of parabola:  
(a)  $x^2 = 4ay$  (b)  $y^2 = 2^2 bx$  (c)  $x^2 = cy$  (d) All of these
- Q 5. Which of the following is an equation of ellipse:  
(a)  $\frac{x^2}{a} + \frac{y^2}{b} = 1$  (b)  $\frac{y^2}{a^2} + \frac{x^2}{b^2} = 1$  (c)  $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$  (d) All of these
- Q 6. Which of the following is not an equation of circle:  
(a)  $(x - 2)^2 + (y - 1)^2 = 2^2$  (b)  $(x + 2)^2 + (y - 4)^2 = 4$   
(c)  $(x - 2)^2 + y^2 = 2^2$  (d) None of these
- Q 7. Curve of  $Y = 3x^2$  can be:



- Q 8. Curve of  $\frac{x^2}{4} + \frac{y^2}{9} = 1$  is:



Q 9. Find radius  $r$  and coordinate of centre  $C$  of the circle  $(x - 3)^2 + y^2 = 4$ :

- (a)  $r = 2$  unit,  $C(0,3)$                       (b)  $r = 4$  unit,  $C(3,0)$   
(c)  $r = 2$  unit,  $C(3,0)$                       (d)  $r = 2$  unit,  $C(-3,0)$

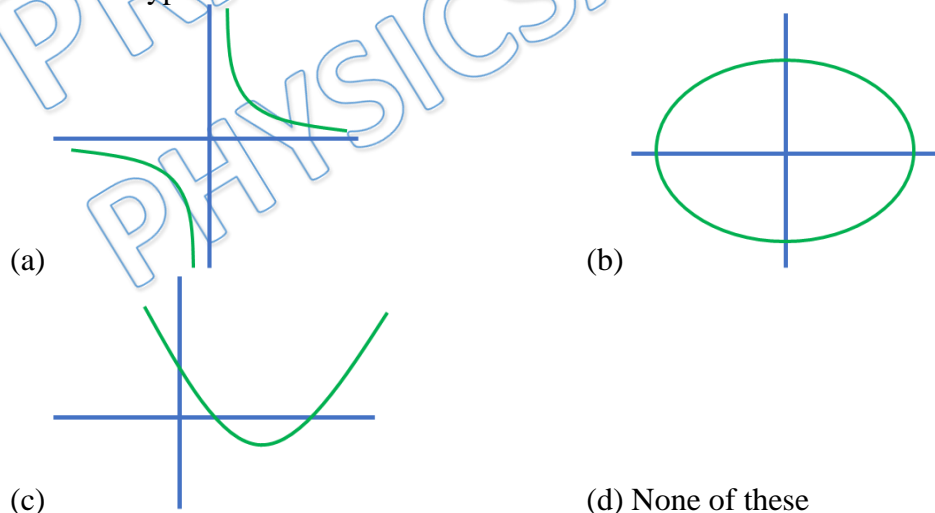
Q 10. Which of the following is an equation of hyperbola:

- (a)  $xy = 1$                       (b)  $\frac{x^2}{a} - \frac{y^2}{b} = 1$                       (c)  $\frac{y^2}{a} - \frac{x^2}{b} = 1$                       (d) All of these

Q 11. Equation of circle which has radius 4 unit and centre is  $C(-1,3)$ :

- (a)  $(x - 1)^2 + (y - 3)^2 = 4^2$                       (b)  $(x + 1)^2 + (y - 3)^2 = 16$   
(c)  $(x + 1)^2 + (y + 3)^2 = 4^2$                       (d) None of these

Q 12. Curve of hyperbola is:



Q 13. A particle is moving in such a way that sum of its distances from two fixed points always remains constant. Path of particle is

- (a) circle                      (b) parabola                      (c) ellipse                      (d) hyperbola















## Answer Key

<b>Q.1 d</b>	<b>Q.2 d</b>	<b>Q.3 a</b>	<b>Q.4 d</b>	<b>Q.5 d</b>
<b>Q.6 d</b>	<b>Q.7 a</b>	<b>Q.8 b</b>	<b>Q.9 c</b>	<b>Q.10 d</b>
<b>Q.11 b</b>	<b>Q.12 a</b>	<b>Q.13 c</b>		

PRATEEK JAIN  
PHYSICSAHOLICS

# Plus leaderboard

Based on educator activity in last 30 days

- 1  Prateek Jain  
11.4M mins
- 2  Ajay Mishra (Akm)  
6.3M mins
- 3  Shubh Karan Choudhary (Skc)  
5.9M mins
- 4  Dr Amit Gupta  
5.5M mins
- 5  Ramesh Sharda  
4.9M mins
- 6  Sandeep Nodiyal  
4.8M mins
- 7  Shailendra Tanwar  
3.6M mins
- 8  Vishal Vivek  
2.7M mins
- 9  Garima Goel  
2.7M mins
- 10  Saurabh Sharma  
2.6M mins
- 11  Dr S K Singh  
2.6M mins
- 12  Nishant Varshney



Use code **PHYSICSLIVE** to get Maximum OFF on Unacademy PLUS / Iconic and learn from India's Top Faculties


**PLUS** **ICONIC\*\***

- ✓ India's Best Educators
- ✓ Interactive Live Classes
- ✓ Structured Courses & PDFs
- ✓ Live Tests & Quizzes
- ✗ Personal Coach
- ✗ Study Planner

24 months	₹2,100/mo	>
No cost EMI	+10% OFF ₹50,400	
18 months	₹2,363/mo	>
No cost EMI	+10% OFF ₹42,525	
12 months	₹2,888/mo	>
No cost EMI	+10% OFF ₹34,650	
6 months	₹4,200/mo	>
No cost EMI	+10% OFF ₹25,200	

To be paid as a one-time payment

[View all plans](#)

 Awesome! **PHYSICSLIVE** code applied ✗

# Written Solution

**DPP-3 Basic Maths: Geometry (Mathematical Curves)**

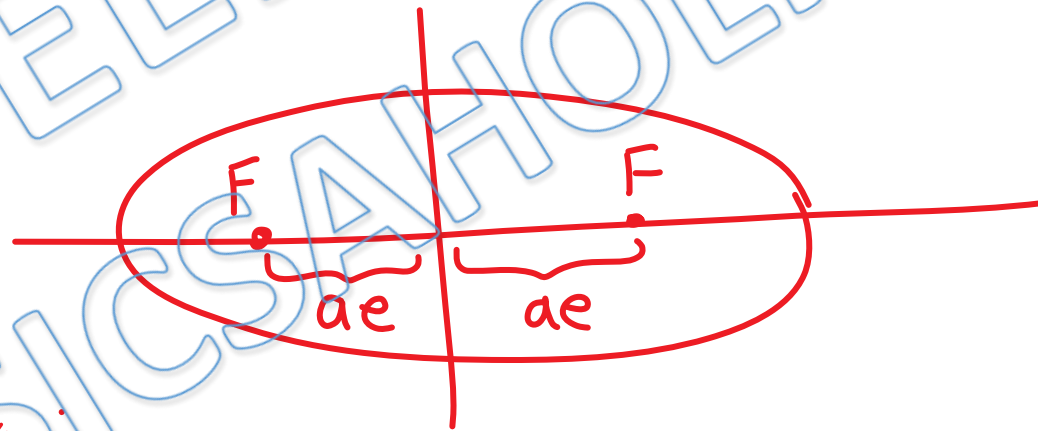
**By Physicsaholics Team**

Solution: 1  $\frac{x^2}{25} + \frac{y^2}{9} = 1 \Rightarrow a=5, b=3$

now  $b^2 = a^2(1 - e^2) \Rightarrow 9 = 25(1 - e^2)$

$\Rightarrow 1 - e^2 = \frac{9}{25} \Rightarrow e^2 = 1 - \frac{9}{25} = \frac{16}{25}$

$\Rightarrow e = \frac{4}{5}$



Distance between foci

$= 2ae = 2 \times 5 \times \frac{4}{5} = 8$

Ans(d)

Solution: 2

Equation of parabola opening up & having vertex at origin is

$$y = ax^2$$

$$\text{at } x = 3, y = 4$$

$$4 = a \times 9$$

$$a = \frac{4}{9}$$

$$\Rightarrow y = \frac{4}{9}x^2.$$

Ans(d)



Solution: 3

Equation of circle

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

where;  $(a, b)$  centre

$r =$  radius.

$$\therefore x^2 + y^2 = 2^2$$

is equation of circle.

with centre  $(0, 0)$

and radius = 2 unit.

Ans. a



Solution: 4

Equation of Parabola

$$y^2 = 4ax \quad [\text{where, } 4a \text{ \& } 4b \text{ are}$$

$$\textcircled{08} \quad x^2 = 4by \quad \text{constants}]$$

Comparing given equation with these standard forms:

$$(a) \quad x^2 = 4ay \quad (\text{Parabola}) \quad \checkmark$$

$$(b) \quad y^2 = 2^2bx \quad [4a = 2^2b] \quad \checkmark$$

$$(c) \quad x^2 = cy \quad [4b = c] \quad \checkmark$$

$\therefore$  a, b, c all are equation of parabola.

Ans. d

Solution: 5 Ellipse 1

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

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

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

all are equation of ellipse,

Ans. d

Solution: 6

Equation of circle

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

$$(a) \quad (x-2)^2 + (y-1)^2 = 2^2$$

centre,  $C(2, 1)$ ; radius,  $r = 2$  unit

$$(b) \quad (x+2)^2 + (y-4)^2 = 4$$

centre,  $C(-2, 4)$ ,  $r = 2$  unit

$$(c) \quad (x-2)^2 + y^2 = 2^2$$

centre,  $C(2, 0)$ ,  $r = 2$  unit.

$\therefore$  all are equation of circle.

Ans. d

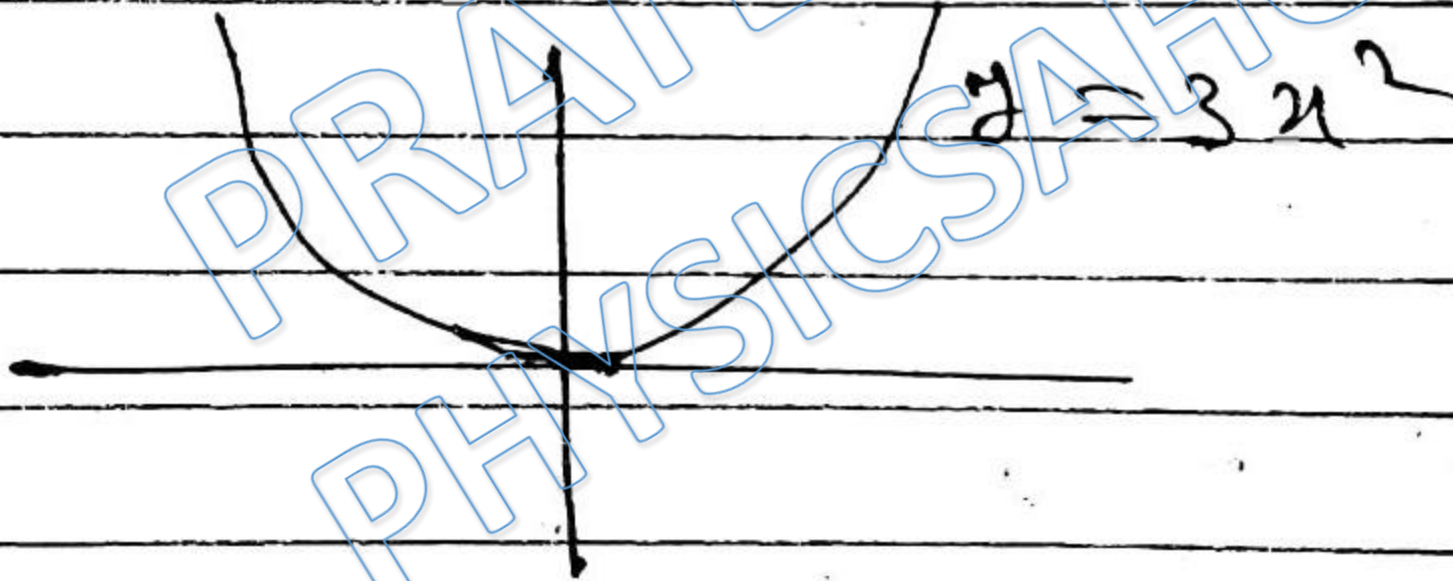


Solution: 7

$$y = 3x^2$$

equation of parabola

opening towards +y-axis



Ans. a

Solution: 8

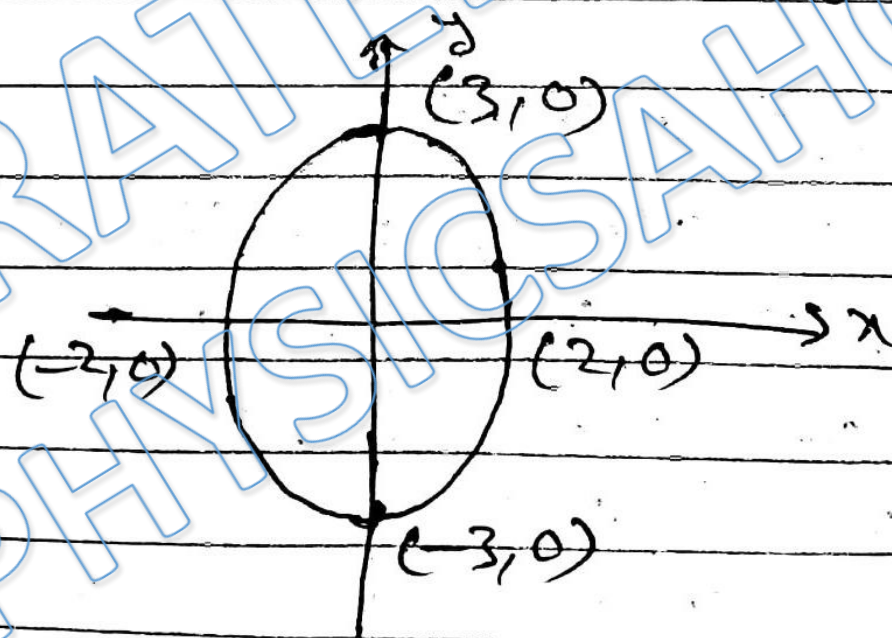
$$\frac{x^2}{4} + \frac{y^2}{9} = 1$$

equation of ellipse:

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

$$a^2 = 4 \Rightarrow a = \pm\sqrt{4} = \pm 2$$

$$b^2 = 9 \Rightarrow b = \pm\sqrt{9} = \pm 3$$



Ans. b

Solution: 9

$$(x-3)^2 + y^2 = 4$$

Compare with standard equation  
of circle:  $(x-a)^2 + (y-b)^2 = r^2$

$$a=3, \quad b=0, \quad r^2=4$$

Centre:  $C(3, 0)$

radius:  $r = 2$  unit

Ans. c



Solution: 10

Standard Equation of Hyperbola:

$$xy = c \quad \text{and} \quad \frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$$

$$\text{and} \quad \frac{y^2}{a^2} - \frac{x^2}{b^2} = 1$$

$$\therefore (a) \quad xy = 1 \quad \checkmark$$

$$(b) \quad \frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$$

$$(c) \quad \frac{y^2}{a^2} - \frac{x^2}{b^2} = 1$$

all are equations of Hyperbola.

Ans. d

Solution: 11

$$c(-1, 3) \equiv (a, b)$$

$$a = -1, \quad b = 3$$

radius,  $r = 4$  unit

Standard equation of circle:

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

$$(x-(-1))^2 + (y-3)^2 = 4^2$$

$$(x+1)^2 + (y-3)^2 = 4^2$$

or

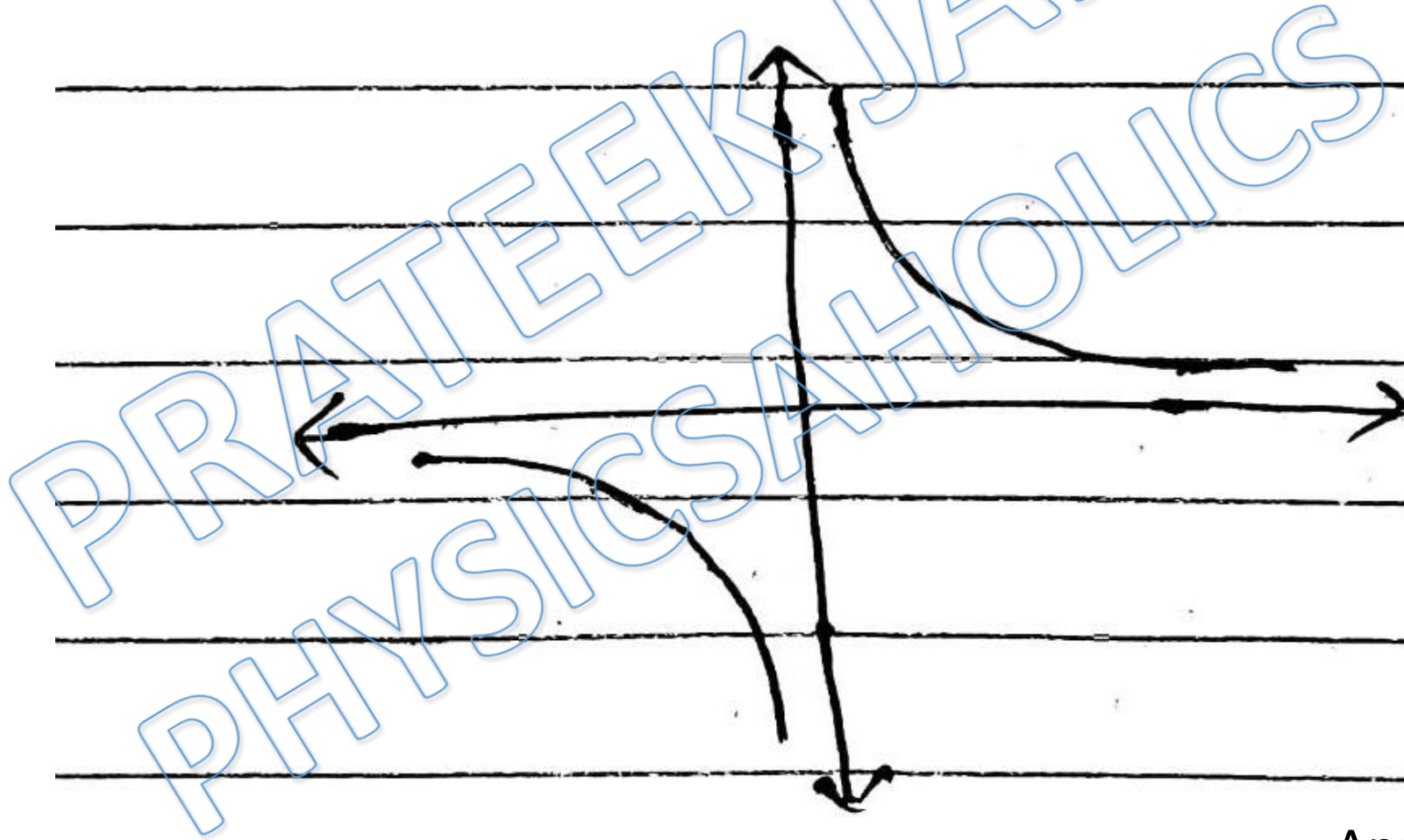
$$(x+1)^2 + (y-3)^2 = 16$$

Ans. b

Solution: 12

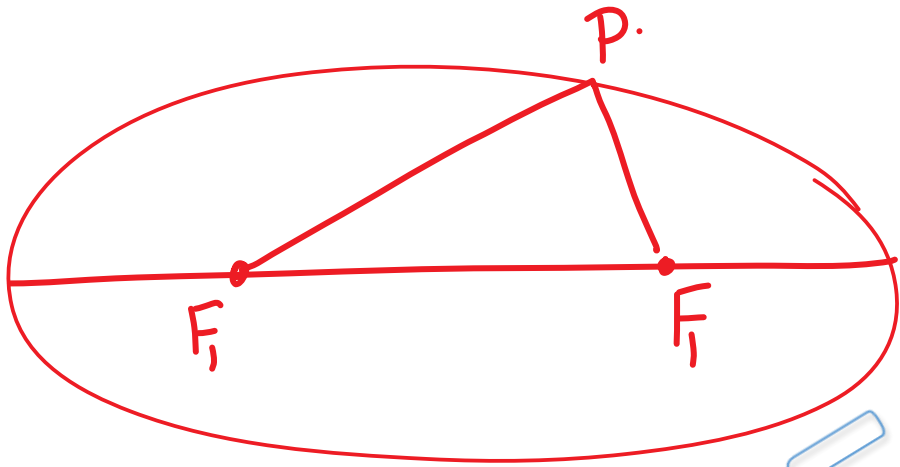
Hyperbola :

$xy = c$



Ans. a

Solution: 13



In ellipse, sum of distances of any point on ellipse from  $F_1$  &  $F_2$  (foci) is  $2a$  (constant).

Ans(c)



**For Video Solution of this DPP, Click on below link**

Video Solution  
on Website:-

<https://physicsaholics.com/home/courseDetails/36>

Video Solution  
on YouTube:-

<https://youtu.be/gboSWA1HIuM>

Written Solution  
on Website:-

<https://physicsaholics.com/note/notesDetails/70>

 **SUBSCRIBE**



[@Physicsaholics](#)

[@Physicsaholics\\_prateek](#)

[@NEET\\_Physics](#)  
[@IITJEE\\_Physics](#)

[physicsaholics.com](#)

[Unacademy](#)



**CLICK**



Chalo Niklo