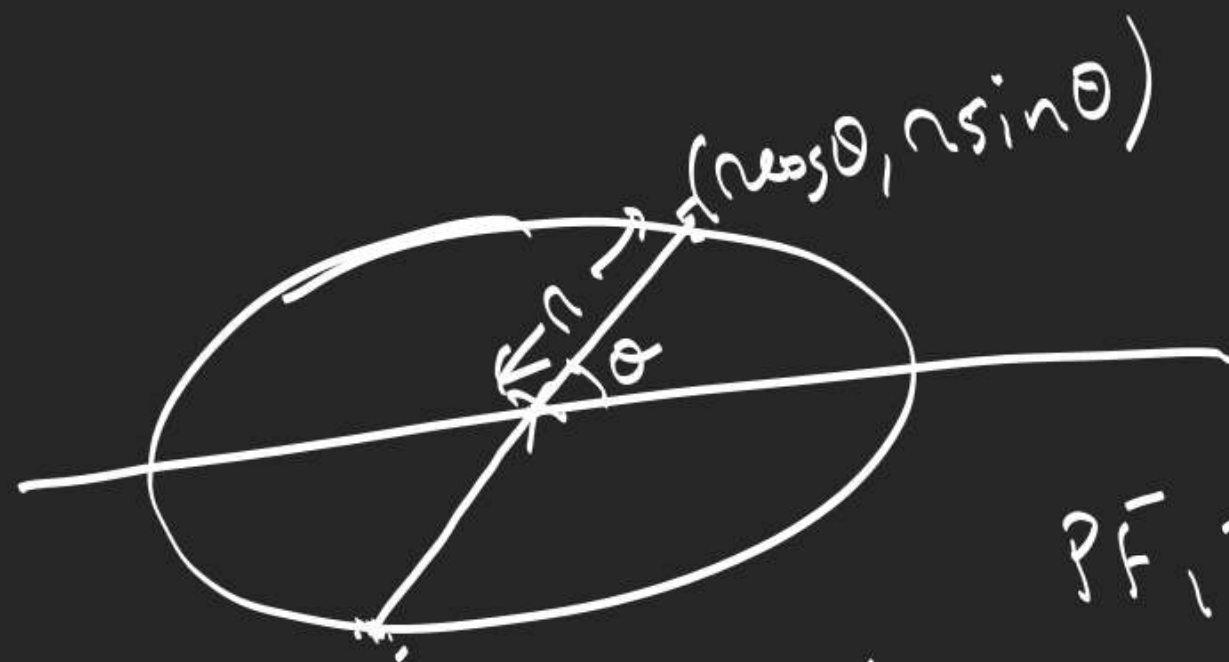


32

11, 16, 23.



$$\frac{r^2}{a^2} \left(\frac{\cos^2 \theta}{a^2} + \frac{\sin^2 \theta}{b^2} \right) = 1$$

$$PF_1 + PF_2 = 2a, \quad 2a > F_1 F_2$$

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

$$\left(\frac{1}{a^2} + \frac{1}{b^2} \right)$$

$$t = \tan^2 \theta$$

$$= 2 \left(\frac{\cos^2 \theta}{a^2} + \frac{\sin^2 \theta}{b^2} \right)$$

$$\left(\frac{1}{a^2} + \frac{1}{b^2} \right) (1+t) = 2 \left(\frac{1}{a^2} + \frac{t}{b^2} \right)$$

16, 23.

$$\frac{x}{a} \cos \frac{\theta+\pi}{2} + \frac{y}{b} \sin \frac{\theta+\pi}{2} = c$$



$$(a \cos \theta, b \sin \theta) P$$

$$Q \left(\frac{a}{e}, b \left(1 + \frac{1}{e} \right) \tan \frac{\theta}{2} \right)$$

$$(ae, 0) F_1$$

$$R \left(\frac{a}{e}, b \left(1 - \frac{1}{e} \right) \tan \frac{\theta}{2} \right)$$

$$\frac{y_1}{e \frac{a}{e} + a} = -\frac{b}{a} \cot \left(\frac{\theta}{2} + \frac{\pi}{2} \right)$$

$$\frac{y_2}{e \frac{a}{e} - a} = -\frac{b}{a} \cot \frac{\theta}{2}$$

$$x = \frac{a}{e}$$

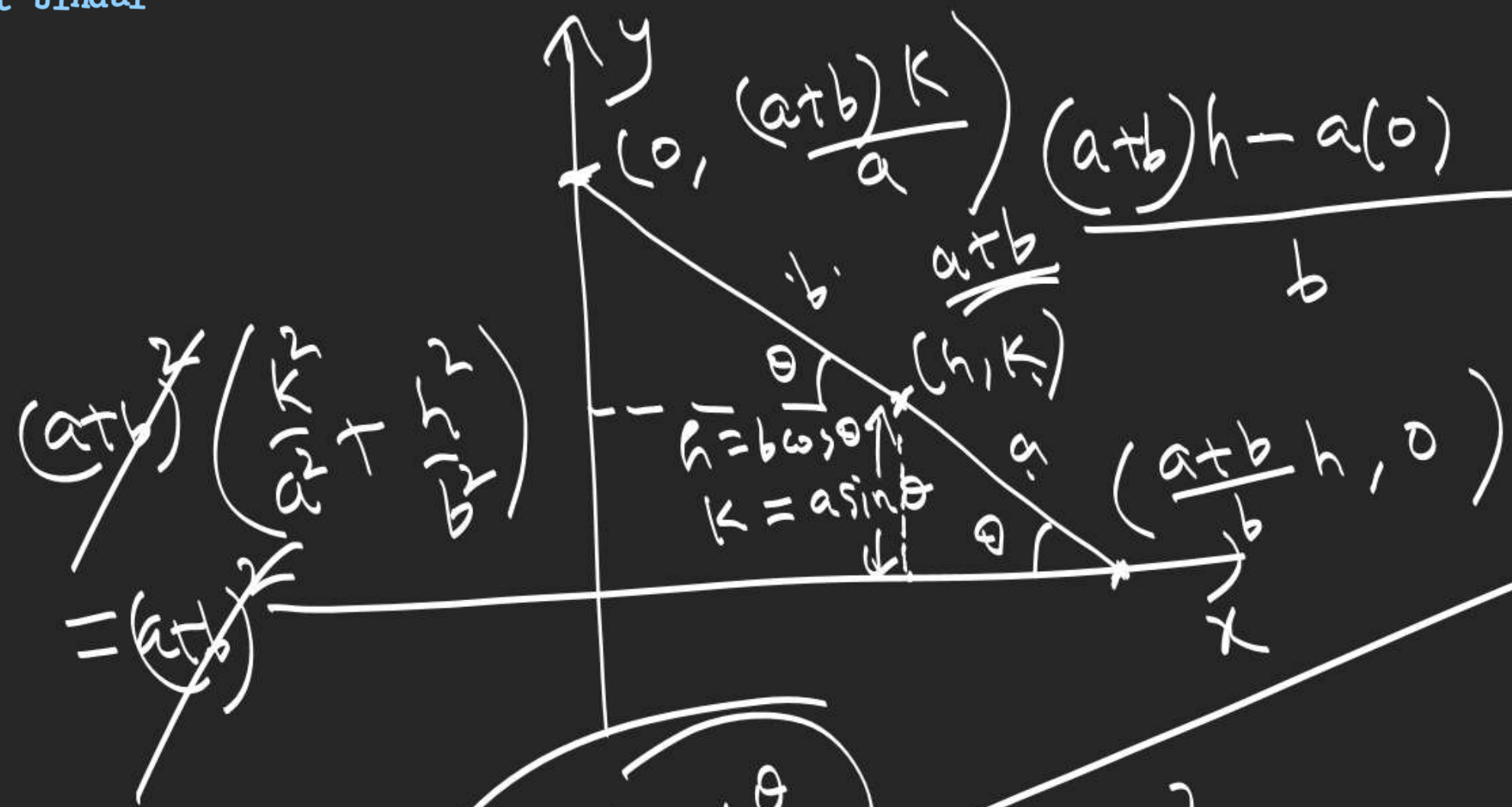
$$\frac{1}{1}$$

$$\frac{b^2}{a^2(1-e^2)}$$

$$\frac{b^2}{a^2} \frac{(1+e)(1-e)}{(1-e^2)^2}$$

$$\frac{b \left(1 + \frac{1}{e} \right) \tan \frac{\theta}{2}}{e \frac{a}{e} - ae} \times$$

$$\frac{b \left(1 - \frac{1}{e} \right) \tan \frac{\theta}{2}}{e \frac{a}{e} - ae}$$



$h = b \cos \theta$
 $k = a \sin \theta$

$\frac{k^2}{b^2} + \frac{h^2}{a^2} = 1$

Paper-2.

Prob. \rightarrow Ex-II (remaining)
Ex-III (1-5)