

Conic Sections - Hyperbola

Spoken Tutorial Project

<http://spoken-tutorial.org>

National Mission on Education through ICT

<http://sakshat.ac.in>

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Learning Objectives



Learning Objectives

We will,



Learning Objectives

We will,

- **Study standard equations and parts of hyperbolae**



Learning Objectives

We will,

- **Study standard equations and parts of hyperbolae**
- **Learn to use GeoGebra to construct a hyperbola**



System Requirement



System Requirement

- **Ubuntu Linux OS v 14.04**



System Requirement

- **Ubuntu Linux OS v 14.04**
- **GeoGebra 5.0.388.0-d**



Pre-requisites



Pre-requisites

- **GeoGebra interface**



Pre-requisites

- **GeoGebra interface**
- **Conic Sections in geometry**



Pre-requisites

- **GeoGebra interface**
- **Conic Sections in geometry**
- **For relevant tutorials, please visit our website**

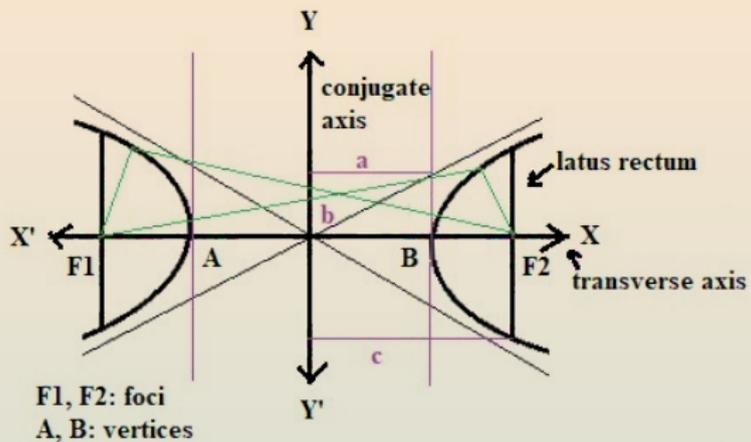
www.spoken-tutorial.org



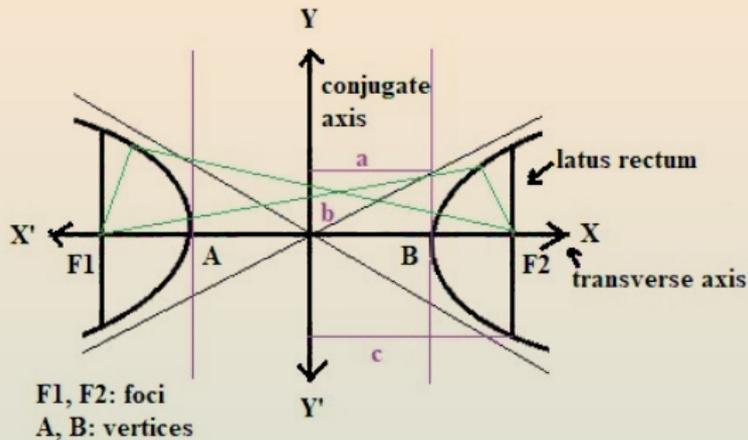
Hyperbola



Hyperbola



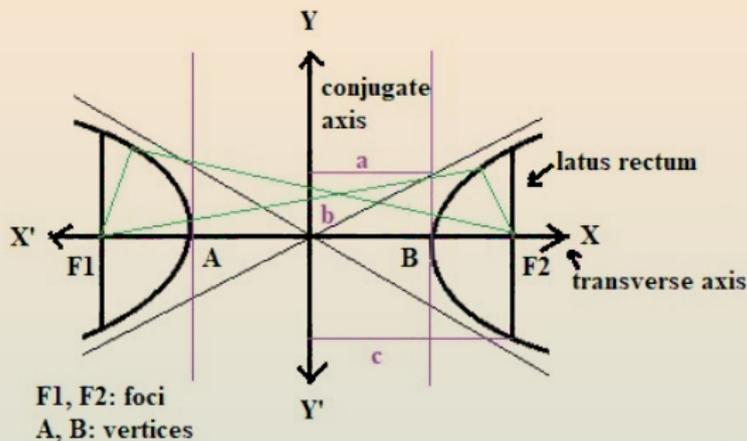
Hyperbola



- Consider two fixed points F_1 and F_2 called foci



Hyperbola



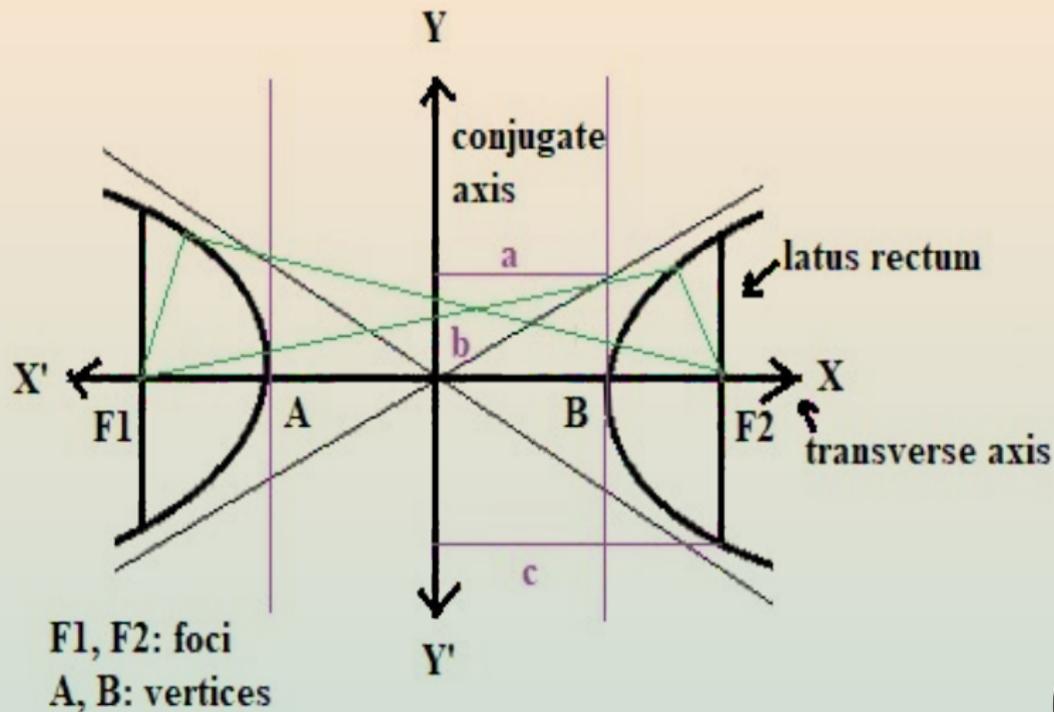
- Consider two fixed points F_1 and F_2 called foci
- A hyperbola is the locus of points whose difference of distances from these foci is constant



Hyperbola



Hyperbola



Text Box for Hyperbola c



Text Box for Hyperbola c

- Transverse axis $2a = 4$
- $c = 2.24$
- Conjugate axis $2b = 2.018$
- $e = 1.12$
- latus rectum = 1.018



Summary

We have learnt how to use GeoGebra to,

- Construct a hyperbola
- Look at standard equations and parts of hyperbolae



Assignment



Assignment

- **Construct hyperbolae with,**



Assignment

- **Construct hyperbolae with,**
- **Foci $(\pm 3, 0)$ and vertices $(\pm 2, 0)$**



Assignment

- **Construct hyperbolae with,**
- **Foci $(\pm 3, 0)$ and vertices $(\pm 2, 0)$**
- **Foci $(0, \pm 5)$ and vertices $(0, \pm 3)$**



Assignment

- **Construct hyperbolae with,**
- **Foci $(\pm 3, 0)$ and vertices $(\pm 2, 0)$**
- **Foci $(0, \pm 5)$ and vertices $(0, \pm 3)$**
- **Find their centres and equations**



Assignment

- **Construct hyperbolae with,**
- **Foci $(\pm 3, 0)$ and vertices $(\pm 2, 0)$**
- **Foci $(0, \pm 5)$ and vertices $(0, \pm 3)$**
- **Find their centres and equations**
- **Calculate eccentricity and length of latus recti, transverse and conjugate axes**



Assignment



Assignment

- Find the co-ordinates of the foci, vertices and eccentricity



Assignment

- Find the co-ordinates of the foci, vertices and eccentricity
- Eccentricity and length of transverse, conjugate axes and latus rectum



Assignment

- Find the co-ordinates of the foci, vertices and eccentricity
- Eccentricity and length of transverse, conjugate axes and latus rectum
- $\frac{x^2}{16} - \frac{y^2}{9} = 1$



Assignment

- Find the co-ordinates of the foci, vertices and eccentricity
- Eccentricity and length of transverse, conjugate axes and latus rectum
- $\frac{x^2}{16} - \frac{y^2}{9} = 1$
- $49y^2 - 16x^2 = 784$



About the Spoken Tutorial Project

- Watch the video available at http://spoken-tutorial.org/What_is_a_Spoken_Tutorial
- It summarizes the Spoken Tutorial project
- If you do not have good bandwidth, you can download and watch it



Spoken Tutorial Workshops

The Spoken Tutorial Project Team

- Conducts workshops using spoken tutorials
- Gives certificates to those who pass an online test
- For more details, please write to contact@spoken-tutorial.org



Forum for specific questions

- Do you have questions in **THIS Spoken Tutorial?**
- Please visit <http://forums.spoken-tutorial.org>
- Choose the minute and second where you have the question
- Explain your question briefly
- Someone from our team will answer



Acknowledgements

- Spoken Tutorial Project is a part of the Talk to a Teacher project
- It is supported by the National Mission on Education through ICT, MHRD, Government of India
- More information on this Mission is available at

<http://spoken-tutorial.org /NMEICT-Intro>

