Trigonometric Ratios and Graphs

Spoken Tutorial Project
http://spoken-tutorial.org
National Mission on Education through ICT
http://sakshat.ac.in

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Learning Objectives

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We will learn how to use GeoGebra to,

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- **Calculate trigonometric ratios**

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- **Plot corresponding graphs**

Pre-requisites

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- **GeoGebra interface**

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- **Previous tutorials in this series**
- **If not, for relevant tutorials, please visit our website**
  www.spoken-tutorial.org

System Requirement

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- **Ubuntu Linux OS v 14.04**

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- **GeoGebra 5.0.388.0-d**

Sine Function

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- **Angle** $B'AC = \alpha = \beta$
- **In triangle** $AB'C$**,**
  $sin(\alpha) = B'C/AB' = y(B')/radius$
- $sin(\alpha) = y$ **coordinate of** B'

Cosine Function

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- **Cosine of an angle is the ratio of the lengths of the adjacent side to the hypotenuse**

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- $cos(\alpha) = AC/AB' = x(B')/radius$

Cosine Function

- **Cosine of an angle is the ratio of the lengths of the adjacent side to the hypotenuse**
- $cos(\alpha) = AC/AB' = x(B')/radius$
- **In this unit circle,** $cos(\alpha) = x$ **coordinate of point** B'

Tangent Function

Tangent Function

- **Tangent of an angle is the ratio of the lengths of the opposite side to the adjacent side**

Tangent Function

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- $tan(\alpha) = sin(\alpha)/cos(\alpha) = B'C/AC$

Tangent Function

- **Tangent of an angle is the ratio of the lengths of the opposite side to the adjacent side**
- $tan(\alpha) = sin(\alpha)/cos(\alpha) = B'C/AC$
- $tan(\alpha) = y(B')/x(B')$

Summary

We have learnt,

- **How to use GeoGebra to calculate and graph** $sin\alpha, cos\alpha, tan\alpha$

Assignment

- **Try these steps to graph secant, cosecant, cotangent functions**
- **Analyze the link between sine values for supplementary angles**
- **Analyze the link between sine and cosine values for supplementary angles**

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 them

Acknowledgements

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- More information on this Mission is available at

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