Limits and Continuity of Functions

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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We will learn how to use GeoGebra to,

- **Understand limits of functions**

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We will learn how to use GeoGebra to,

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- **Look at continuity of functions**

System Requirement

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- **Ubuntu Linux OS v 16.04**

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- **GeoGebra 5.0.481.0-d**

Pre-requisites

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- **GeoGebra interface**

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- **Limits**

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- **GeoGebra interface**
- **Limits**
- **Elementary Calculus**

Pre-requisites

- **GeoGebra interface**
- **Limits**
- **Elementary Calculus**
- **For relevant tutorials, please visit our website**
  www.spoken-tutorial.org

Limits

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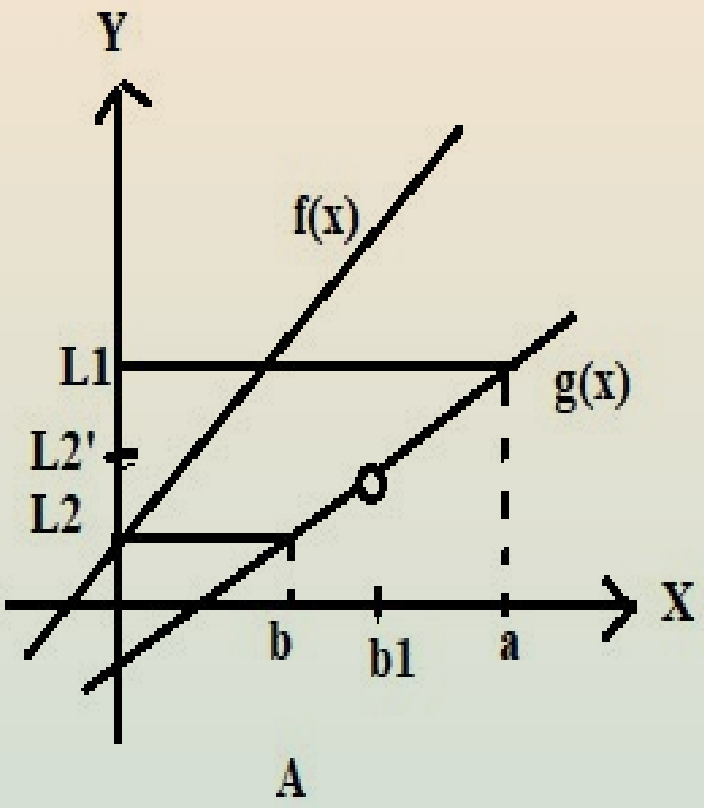
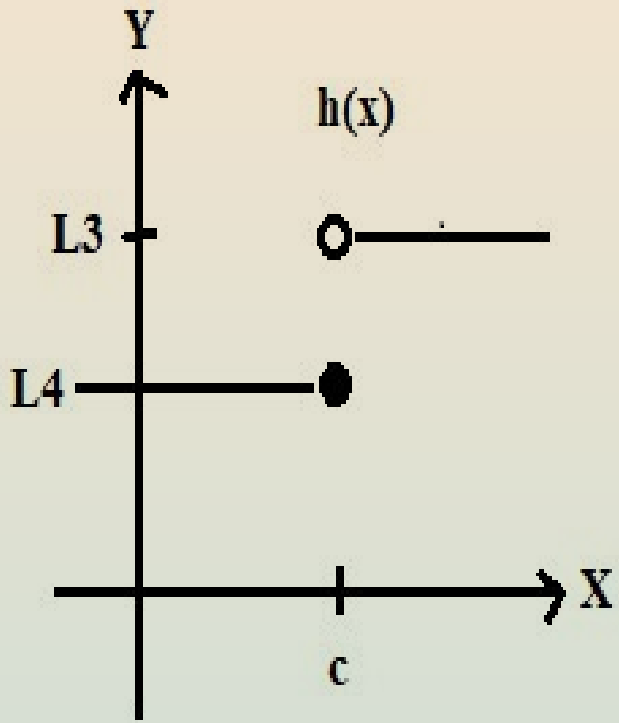
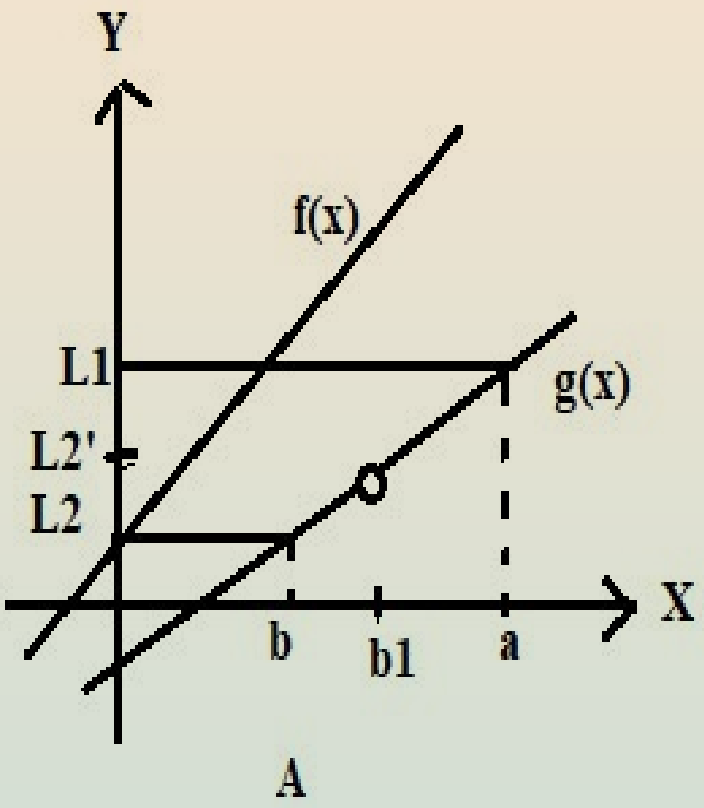


A



B

Limits



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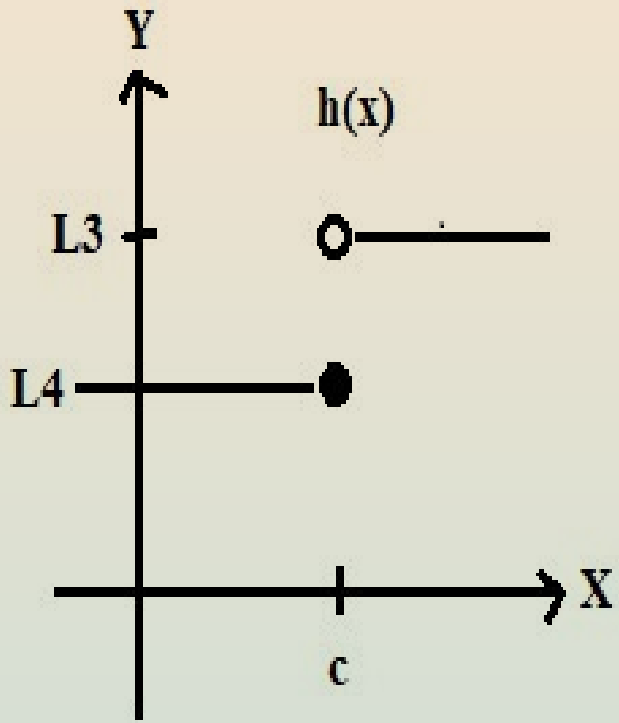


B

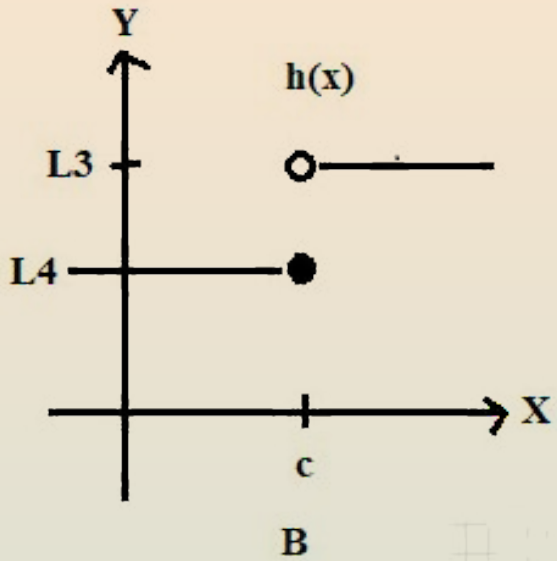
Limit of a Rational Polynomial Function

Limit of a Rational Polynomial Function

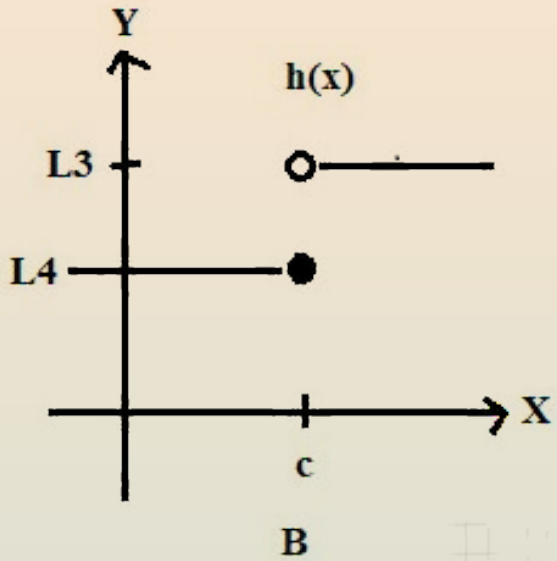
- **Let us find** $\lim_{x \to 2} \frac{3x^2 - x - 10}{x^2 - 4}$

Limits of Discontinuous Functions

Limits of Discontinuous Functions

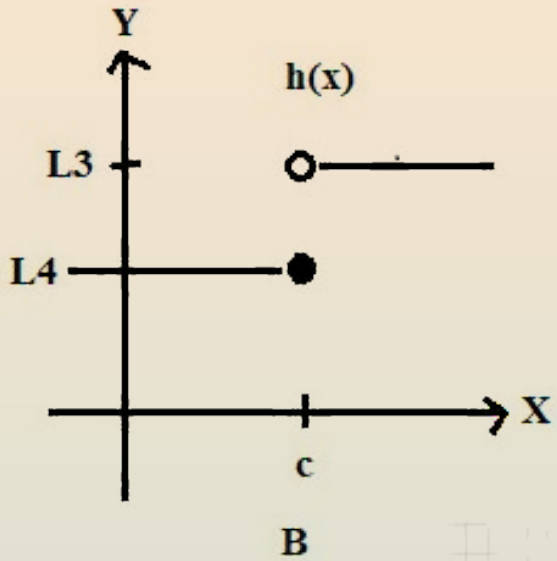


Limits of Discontinuous Functions



- $\lim_{x \to c} h(x) = ?$

Limits of Discontinuous Functions



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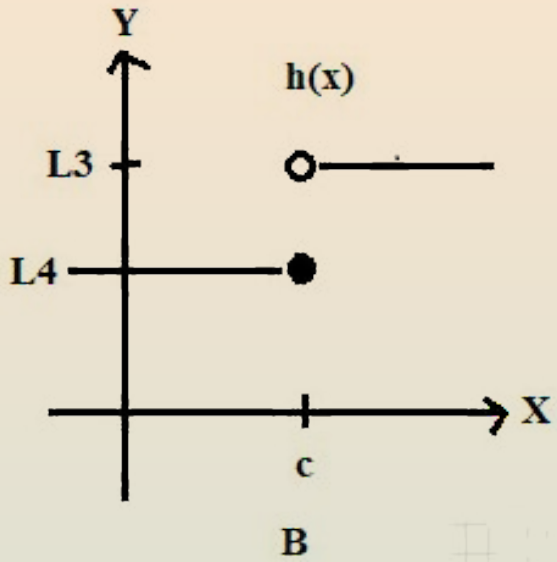
- $\lim_{x \to c} h(x) = L4, \lim_{x \to c+} h(x) = L3$

Limits of Discontinuous Functions



- $\lim_{x \to c} h(x) = ?$
- $\lim_{x \to c} h(x) = L4, \lim_{x \to c+} h(x) = L3$
- **Thus,** $\lim_{x \to c} h(x)$ **Does Not Exist (DNE)**

Limit of a Discontinuous Function

Limit of a Discontinuous Function

Let us find

$$\lim_{x \to 0} f(x) = \begin{cases} (2x+3) & x \leq 0 \\ 3(x+1) & x > 0 \end{cases}$$

and

$$\lim_{x \to 1} f(x) = \begin{cases} (2x+3) & x \leq 0 \\ 3(x+1) & x > 0 \end{cases}$$

Summary

We have learnt how to use GeoGebra to,

- **Understand limits of functions**
- **Look at continuity of functions**

Assignment

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- **Find** $\lim_{x \to 2} \dfrac{(x^3 - 2x^2)}{(x^2 - 5x + 6)}$

Assignment

- **Find** $\lim_{x \to 2} \dfrac{(x^3 - 2x^2)}{(x^2 - 5x + 6)}$
- **Evaluate** $\lim_{x \to 0} \dfrac{\sin 4x}{\sin 2x}$

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

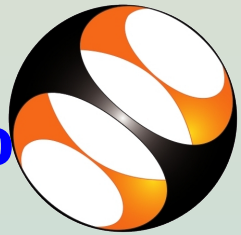
The Spoken Tutorial Project Team

- **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

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