Learning Calculus With Geometry Expressions™
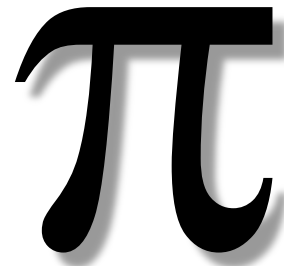
by L. Van Warren

π

Introduction

Learning Calculus with Geometry Expressions™

Written by L. Van Warren

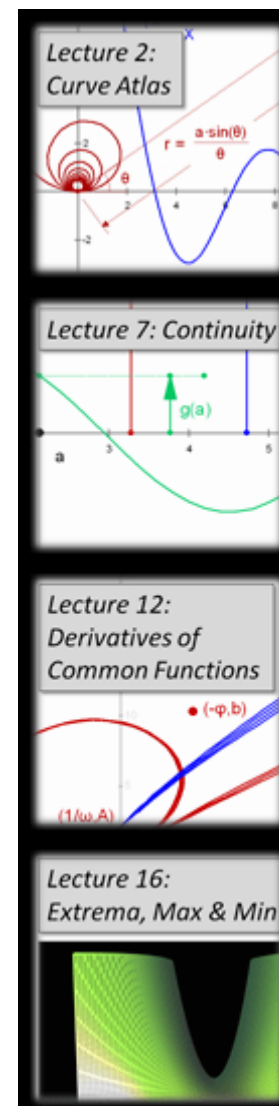*Edited by Hannah Todd and Heather Duggan*

Organization and Examples

Learning Calculus consists of twenty-six lectures grouped in six chapters. Each chapter contains four or five lectures in pdf format.

Each lecture refers to Geometry Expressions example files suffixed with a *.gx* extension. These are read-only, but you may edit them if you wish by using the **File/Save As** command and renaming them.

The lectures also use the free computer algebra system, wxMaxima™. These examples are suffixed with a *.wxm* filename extension.

The text also refers to a few Excel spreadsheet files, supplied in the new and old versions, *.xls* and *.xlsx*.

In one lecture on reaction rates, *.c3xml* chemistry files are included, these can be read using CambridgeSoft chemistry software, but this is not necessary for understanding the mathematics.

Lecture 2: Curve Atlas

$r = \frac{a \cdot \sin(\theta)}{\theta}$

Lecture 7: Continuity

g(a)

Lecture 12: Derivatives of Common Functions

(-φ,b)

(1/ω,A)

Lecture 16: Extrema, Max & Min

Fonts

To view PDF's and spreadsheets you need the Mathematica fonts.

Windows 7
   Open the TrueType folder
   Select all the .ttf files
   Right click and choose Install
Windows Vista
   Open the **Control Panel → Appearance and Personalization → Fonts**
   Select **File → Install New Font**...
   Browse to the **TrueType** folder where you downloaded the *Mathematica* fonts
   Click the [Select All] button followed by the [Install] button
Windows XP
   Open **Control Panel →** Fonts
   Select **File →Install New Font**...
   Browse to the **TrueType** folder where you downloaded the *Mathematica* fonts
   Click the [Select All] button followed by the [OK] button to install the fonts
Mac OS X
   Run **Applications/Font Books**
   Select **File → Add Fonts...**
   Select **TrueType/*MathematicaFonts.dfont***

π