

# Automatic calculation of plane loci using Groebner bases and integration into a Dynamic Geometry System

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# Overview

## JSXGraph - short overview

### Computing plane loci using Groebner bases

```
<script src="/javascript">  
    JSXGraph.initBoard('box', {ax:  
    var a = brd.createElement('slider', [[1,3],[5  
    var b = brd.createElement('slider', [[1,2],[5  
    var f = function(x){ return Math.sin(x); }  
    var plot = brd.createElement('functiongraph',  
    var os = brd.createElement('riemannsum', {f  
    function(){ return s.Value(); }  
    function(){return a.Value(); }  
    function(){return b.Value(); }  
    },  
    {fillColor:'#ffff00'
```



# JSXGraph

## What is JSXGraph?

- ▶ A library implemented in JavaScript
- ▶ Runs in recent versions of all major browsers
- ▶ No plugins required
- ▶ LGPL-Licensed

## Features

- ▶ Dynamic Geometry
- ▶ Interactive function plotting
- ▶ Turtle Graphics
- ▶ Charts



## Supported Hardware

- ▶ PC (Windows, Linux, Mac)
- ▶ Mobile phones
- ▶ "Touchpads" like the Apple iPod and iPad
- ▶ Basically everything which runs at least one of the supported browsers



## Supported Browsers

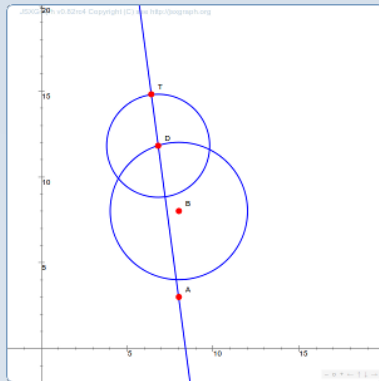
- ▶ Firefox
- ▶ Chrome/Chromium
- ▶ Safari
- ▶ Internet Explorer
- ▶ Opera

```
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var brd = JSXGraph.initBoard('box', {ax:  
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```



# Computing plane loci using Groebner bases

- Given a set of free and dependent points



# Computing plane loci using Groebner bases

- ▶ we first choose a coordinate system

