

# MIT MATHLETS

MIT MATHLETS

HOME ABOUT APPLETS COURSES ACTIVITIES FORUM

WELCOME!



Welcome to the MIT Interactive Mathematics Site!

Here you will find a suite of dynamic Java applets for use in learning about differential equations and other mathematical subjects, along with examples of how to use them in homework, group work, or lecture demonstration, and some of the underlying theory. We welcome your contributions, through the forum.



**RECENT POSTS:**

- > New Videos Added!
- > New calculus Mathlets!
- > Taylor Polynomials in Aerospace Engineering
- > Stability in Aero-Astro
- > TEAL Meets the Mathlets

**RECENT COMMENTS:**

- > Dan on TEAL Meets the Mathlets
- > Bill on Stability in Aero-Astro

## Module 1: Mathlets in Lecture

Haynes Miller, Professor of Mathematics, MIT



## Module Objective:

---

- 

---

MIT MATHLETS

## Lecture Fragment Objectives:

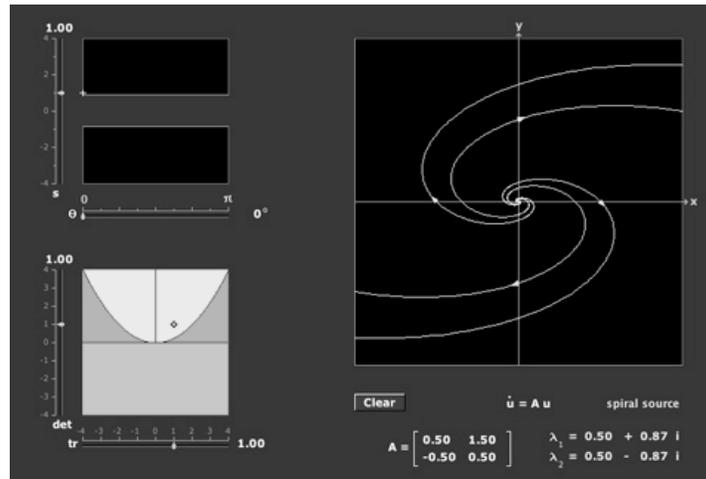
---

- 
- 
- mathematics in Mathlet visualizations.
- Support the contention that...  
    Mathematics is a highly visual  
    and very intuitive subject.

---

MIT MATHLETS

## Mathlet: Linear Phase Portraits Cursor Entry



## Discussion Questions

1. Mathlet, there was a lot of information on the screen.

Do you remember how you felt?

Were you confused by it?

(I ask because your students' experience will be not too different from your own, unless you have seen an applet like this before.)

MIT MATHLETS

## Discussion Questions

---

2. I introduced the various windows and functionalities of this Mathlet over a period of several minutes.

Make an ordered list of these, in sequence, and think about other ways I might have presented them to this audience.

---

MIT MATHLETS

## Discussion Questions

---

3. There are still other aspects of this tool, which I did not talk about at all.

Suggest some additional investigations one can pursue using it.

---

MIT MATHLETS

## Design Features of MIT Mathlets

---

- High degree of interactivity
- Narrow focus
- Multiple linked representation of information
- Click and drag control rather than keyboard
- Uniformity of style and convention

---

MIT MATHLETS

## Some Virtues of Mathlets

---

1. They bring out the intrinsic visual character of mathematics.
2. They mediate between special cases and the general case.

---

MIT MATHLETS



## Lecture Fragment Objectives:

---

The participant will be able to use Mathlets to

- support lecture-based instruction
- increase student participation in the lecture
- give students a visual to correlate symbols and calculations



Practice your use of a Mathlet,  
before you use it in lecture!

---

MIT MATHLETS

### Decide in advance what you want to do!

- Which parts will you call attention to and in what order?
- What sliders will you move, and to what settings?
- How will you mix the Mathlet demonstration with chalk or projector content.

---

MIT MATHLETS

## Discussion Questions

---

1. This was an interactive lecture, with quite a few suggestions and answers from the audience.

How many students do you think provided feedback?

Do you think I had any information about how much the others were understanding?

---

MIT MATHLETS

## Discussion Questions

---

2. What further lessons could you draw from this Mathlet in a lecture setting?

---

MIT MATHLETS

## Virtues of Mathlets

---

3. They can be used to break a lecture into bite-sized fragments.
4. Their graphical and artistic quality can excite interest.