

PMAT 527/627 - Using Sage

What is Sage?

Sage is a mathematics software package, designed as an open-source (and free!) alternative to Mathematica, Maple, Matlab and Magma. It includes within it dozens of outstanding open source programs with narrower goals, gluing them together with Python and the Sage core library.

You can interact with Sage using a variety of interfaces, though in this course you'll primarily be using the notebook interface through your web browser. If you want to download Sage for your own computer, or learn more about it, go to <http://www.sagemath.org>.

Notebook server

The math department is running a Sage notebook server at <http://sage.ucalgary.ca>, and our course is the only user this semester.

Security and common resources

Sage and Python provide access to shell commands, which is a potential security vulnerability if your account is compromised. Change your password after logging in for the first time, and treat it respectfully.

Also note that the whole course is using the same server. Try not to perform CPU or memory intensive computations on the server, especially right before an assignment is due - anything that runs longer than a minute or so is probably too long. If you need more computational resources for a project, talk to me.

Homework assignments

The homework assignments are available on the notebook server. Once you've logged in (account information provided on the first day of class), you can create a copy of each assignment (note that later assignments are currently just placeholders). Click on the "Published" link in the menu bar at the top right of the window, then on the assignment you want to work on, then the "Edit a copy" link at the top right.

In each assignment there will be problems that require coding, and also problems that require more traditional proofs. There is a function defined at the top of each assignment that will allow you to write latex code in the cells.

The server is backed up daily (via git and a cronjob), and that backup on the day each assignment is due will be the mechanism for turning in your work. So if you will not be able to complete an assignment on time you'll need to get permission in advance.

VPN

If you want to access the course's notebook server from a computer not on campus, you'll need to install and use the University's VPN client.

1. You'll need to enter your IT username and password during the process; see <http://www.ucalgary.ca/it/access/itaccount> if you don't have an IT account or don't remember your username or password.

2. Go to <http://www.ucalgary.ca/it/software/downloads>, where you can find Windows, Mac and Linux download links and Windows, Mac and Linux instructions.

With the VPN tunnel running you should be able to access the course's Sage server from off campus.