

Introduction to Sage and Ximera

SageMath is a computer algebra system, throughout these labs sage cells will be used for certain problems. This lab introduces you to the basics of using a sage cell.

Introduction

If you ever want to use a sage cell when one is not provided, or would like to experiment with Sage Cells, you can follow this link.

Functions

To define a function you use the notation in the following sage cell:

```
1 f(x)=x^5+3*x+4
```

SAGE

Question 1 What output did you get from evaluating the sage cell?

Multiple Choice:

- (a) None ✓
- (b) $f(x) = x^5 + 3x + 4$
- (c) $x^5 + 3x + 4$

Feedback (attempt): All we did was define a function, to see the function definition type $f(x)$.

Evaluate the function at $x = 3$ by typing $f(3)$ in the sage cell, what did you get?

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If you don't use function notation, must define your variables before using them like in the following Sage Cell.

Learning outcomes:
See link at <https://sagecell.sagemath.org/>

SAGE

```
1 var('x y')
2 eqn=4*x+y==1
3 solve(eqn,y)
```

Question 2 From the sage cell above, what can you say about “=” vs “==”?

Multiple Choice:

- (a) “=” is used for assignment and “==” is used to signify equality ✓
- (b) “=” is used to signify equality and “==” is used for assignment

Feedback (attempt): Note that you need to include the * operator, go back and take out the * to see how Sage Does error messages and debugging.