

Last name _____

First name _____

LARSON—MATH 255—CLASSROOM WORKSHEET 01
Getting Started.

1. Create a Cocalc/Sage Cloud account.
 - (a) Start the Chrome browser.
 - (b) Go to `http://cocalc.com`
 - (c) “Create new account” using **your VCU email address** .
 - (d) You should see an existing Project for our class. Click on that.
 - (e) Click “New”, then “Sage Worksheet”, then call it **c01**.
 - (f) For each problem number, label it in the Sage cell where the work is. So for Problem 1, the first line of the cell should be **#Problem 1**.

The multiplication operator in Sage is “*”. The most common error in Sage is forgetting to put in a “*” when multiplying.

2. Find $900(1 + .06(90/365))$.
3. Find 25^2 by evaluating `25**2`. Find 25^{10} .

Sage uses only curved parentheses for grouping. The common square parentheses are reserved in Sage for *lists*.

4. Find $550 \frac{[1 + (1.05)^{-30}]}{0.05}$. What happened? How can you fix it?

Sage returns *exact expressions* (no rounding error) when possible.

5. Find an exact expression for $\sqrt{8}$ by evaluating `sqrt(8)`.

You often have to *force* Sage to give you a decimal approximation of what you’ve calculated.

6. Use `n(_)` to find a decimal approximation for $\sqrt{8}$. (The underscore refers to the last computation).
7. What can you do for other roots besides `sqrt`? Find $\sqrt[6]{50}$.
8. Find $\sqrt{-4}$.
9. Find *both* square roots of -10 .
10. Find i^2 .
11. Evaluate “pi”. Then use `n(_)` to find a decimal approximation for π .

12. Find a decimal approximation for $\sqrt{2}$.
13. Evaluate “e”. Find a 6-digit approximation for e
14. Find a 6-digit approximation for e^3
15. Find $\log 10$
16. Find $\log_{10} 10$.
17. Find $\sin \frac{\pi}{3}$
18. Find $\tan \frac{\pi}{2}$.
19. Find $\arcsin \frac{1}{2}$

Sage doesn't understand degrees—only radians. What can you do here?

20. Find $\sin 47^\circ$, and a decimal approximation.
21. Type in “i” and evaluate.
22. Find i^3 by hand, then check it with Sage.

`plot` is Sage's powerful and flexible command for plotting functions of a single variable.

23. Sketch the graph of x^3 on the interval $(-2, 2)$.
24. Sketch the graph of $|x - 1|$ on a “nice” interval.
25. Sketch $\cos x$.
26. Sketch $\cos t$. What happens? What do you think the difference is?
27. Sketch $\cos x$ on the interval $(-2\pi, 2\pi)$.
28. Sketch $x^3 - x$ with y -range between $y = -6$ and $y = 6$.

Getting your classwork recorded

When you are done, before you leave class...

- (a) Click the “Make pdf” (Adobe symbol) icon and make a pdf of this worksheet. (If Cocalc hangs, click the printer icon, then “Open”, then print or make a pdf using your browser).
- (b) Send me an email with an informative header like “Math 255 - c01 worksheet attached” (so that it will be properly recorded).
- (c) Remember to attach today's classroom worksheet!