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 mymail email address.
   (d) You should see an existing Project for our class. Click on that.
   (e) Click “New”, then “Worksheets”, 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)).


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

4. Find $550 \left[ 1 + (1.05)^{-30} \right] / 0.05$. 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 $\sqrt{50}$.

8. Find $\sqrt{-4}$.

9. Find both square roots of $-10$.

10. Find $i^2$. 
11. Evaluate “pi”. Then use \( n(\pi) \) to find a decimal approximation for \( \pi \).

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 \( \log_{10} 10 \).

16. Find \( \log_{10} 10 \).

17. Find \( \sin \left( \frac{\pi}{3} \right) \).

18. Find \( \tan \left( \frac{\pi}{2} \right) \).

19. Find \( \arcsin \left( \frac{1}{2} \right) \).

   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.

   \texttt{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 \( y = 6 \).

29. Sketch \( x^3 - x \) on the interval \((-3, 3)\) and \( y \)-range between \( y = -6 \) and \( y = 6 \).