Name: _____   COMP 150
Sage Cell Server   Fall 2018

These questions all pertain to the Sage Cell Server at https://sagecell.sagemath.org/. For each question, predict what Sage will do. Then test your prediction by trying out the commands, and update your understanding as needed.

Note the Sage Cell is a window like a calculator screen. After entering commands in the cell, hit the big button marked "Evaluate." Alternatively, hit shift-enter.

Give the best explanations you can, and use complete sentences.

Note: Cutting and pasting from Word can sometimes produce errors. Retyping from a Word document into Sage may sometimes be necessary.

1. Is there difference between doing `3+4` (no spaces) and `3 + 4` (with spaces)? What happens in each case?
2. What are the differences among the following commands? Why do these commands do what they do?
    (a) `8 / 2`
    (b) `8.0 / 2`
    (c) `8. / 2`
    (d) `3 / 4`
3. How can you get a decimal approximation to `47/57`? Find such an approximation.
4. What operation is being performed with `3**2` and `3^2`? Compare and contrast.
5. Explain the output from `12^50` and `12.^50`. What is an advantage and a disadvantage of each?
6. What is the value of `cos(pi)`? `log(1)`? `log(e)`? Which answer is surprising? Why?
7. Will you get an equivalent response to entering the following:
    (a) `x^3 / (2 * x²)`
    (b) `x^3 / 2 * x^2`
    ? Explain. Is `x^3 / 2 / x^2` equivalent to either one of these? Explain.
8. What does `derivative(x^3 + 2*x, x)` yield? What does `integral(x^3 + 2*x, x)` yield? What does `limit(x^3 + 2*x, x = infinity)` yield?
9. What similar tools have you used to the Sage Cell? Compare and contrast based on what you've seen of the Sage Cell so far.
10. When you poke around the site where the Sage Cell Server is located, what resources of possible interest do you uncover? Be specific. If you don't find any useful resources, what resources did you rule out as not useful, and why?