Every week we will have a lab using either Maple or, occasionally, Mathcad. The labs are to be done in the computer and *emailed* to me at elhill@mnstate.edu. When I receive your file, I will email a confirmation to you. You should save a copy, so either bring a jump drive or disk every day. Alternatively, if you email it to yourself, it will be saved in your email inbox, and you can access it in any computer cluster on campus.

Create a new text box for each numbered question and use the format indicated in parenthesis for the display. Use complete sentences.

1. What is your name and major? (bold text, 12 pt, Arial font)

   Why have you chosen it as your major? (regular text, 10 pt, Arial, text in black with a yellow background for this sentence only)

2. Are you currently enrolled in Calculus I, Calculus II, or another mathematics class? If so, which one(s)? (12 pt. Arial, red letters, underline only the course name(s); the rest in italics, no background color)

3. What is your experience with calculators in mathematics? How have you used the calculator in mathematics? Which calculator(s) have you used? (regular text, 10 pt. Times New Roman, black letters, rose background for the answers to the questions in this part)

4. What is your experience with computers in mathematics? What mathematics computer software have you used? (italics, 12 pt, Times New Roman, black letters, light blue background for the answer to the questions in this part)

Enter and simplify each expression. For some of the problems, the result must be expressed in the indicated format. Note any differences in the solution or format of the solution. Optional: You may modify the color for the expressions and the backgrounds.

5. $\dfrac{3.452 + 0.2351}{1129.6 - 69.57}$ Do three times.

   (a) Solution in scientific notation with six significant digits.
   (b) Solution in standard notation with three decimal places.
   (c) Solution in standard notation with six decimal places.

6. $\sqrt{18} + \dfrac{1}{\sqrt{8}} - 3\sin\left(\dfrac{5\pi}{4}\right)$ Do twice.

   (a) Exact
   (b) Approximate to six decimal places

7. $\sqrt[3]{-8}$ Do three times.

   (a) Use $\sqrt[3]{-8}$ and evaluate then convert to "surd" form.
   (b) Use $\sqrt[3]{-8}$ and evaluate then approximate to 5 decimal places.
   (c) Use $(-8)^{\frac{1}{3}}$ and evaluate and then simplify.

8. Type in ScientificConstants[GetConstant](g) and hit enter. What is g?

9. $\left(4.32 \times 10^5 \text{kg}\right)\left(2.14 \times 10^{-2}\text{m/sec}^2\right)$. Evaluate this in-line and then simplify the units. Explain the units in a sentence.

10. Simplify $\left(5x^2 + 4x - 3\right) - \left(7x^2 - 2x + 1\right)$.

11. Factor $2x^4 + x^3 - 11x^2 + 23x - 42$.

12. Combine $\dfrac{4x + 3}{x - 5} + \dfrac{x + 2}{3x - 1}$ to form a single rational expression.

13. Simplify $\left(\dfrac{6x^2 + x - 2}{5x^2 + 18x + 9}\right)\left(\dfrac{5x^2 + 23x + 12}{2x^2 + 7x - 4}\right)$

14. $\sin^2(x) + \cos^2(x)$ Do twice.

   (a) Just evaluate (either in-line or displayed).

   (b) Right click and from the pull-up menu choose Simplifications $\rightarrow$ Assuming Real.

   What does the procedure that you used in the second part imply about trigonometric functions?

Solve each problem and write the solutions to the problems in complete sentences.

15. A conical shaped building has a circumference of 28.2 meters and a height of 9.3 meters. Find the building's capacity and lateral surface area.

16. A 12-hour clock has a minute hand that is eight inches long and an hour hand that is five inches long. find the distance between the tips of the minute hand and hour hand at 5:00.