

Use Maple to complete this worksheet.

Save your Maple worksheet as `MapleExercises2.YourLastNameFirstInitial.mw` and submit via email to `crawford@elmhurst.edu` by 11:59 pm on Thursday 02/20.

Remember you can always look at the help pages. Some of the commands used in this assignment are `simplify`, `plot` (& `plot/options`), `diff`, `int`, `limit`, `solve`, and `fsolve`

1. Simplify the following expression.

$$5a \cdot \left\{ \frac{\frac{2}{3} + \left[2 - \frac{3}{2}(4+a) - 8a + 6b \right]}{2b + \frac{1}{a}} \right\}$$

2. Graph the function $y = \frac{2x^2 - 3x + 2}{x^2 - 1}$

Make sure the graph looks “nice.”

3. Find the derivative of $f(x) = \frac{\sqrt{3x^4 \ln x}}{\sec(4x^2 + 8x)}$

4. Find the partial derivative u_{zyxx} for $u = \sqrt{x + 2y^2 + 3z^3}$

5. Given $f(x, y, z) = \tan\left(\frac{3x + 2y}{z}\right)$, find $f_y(\pi, 2\pi, 3)$.

[Make sure any trig functions are evaluated.]

6. Evaluate the following integrals.

(a). $\int \sqrt{3 - 2x^2} dx$

(b). $\int_2^4 \int_0^1 \int_0^{1-z^2} 2xze^y dx dz dy$

7. Determine the following limit.

$$\lim_{t \rightarrow \infty} \frac{3e^{-2t} + 5e^{2t}}{2e^{-2t} + 3e^{2t}}$$

8. Use the `solve` command to find the values of x that satisfy general quadratic equation $ax^2 + bx + c = 0$

9. Use the `solve` command to find the solutions to the following system of equations. If the `solve` command does not work, try using `fsolve`.

$$3a + 2b - c = 1$$

$$a - b = 0$$

$$2a + 2b + c = 3$$

10. Use Maple to

(a). Graph the functions $y = \sin(2x)$ and $y = \frac{1}{2}x + \frac{1}{2}$ on the same set of axes.

Make the sine function a thicker, solid black curve. Make the line a dashed blue curve.

[On the bottom of the plot help page, click on `plot/options`. Notice all the options you can change. For this problem, you only need color, linestyle, and thickness.]

(b). Find the intersections of these two graphs.

[Try using the `solve` command first – what happens? Then use `fsolve` to find the solutions. You may need to specify an approximate starting value to get each of the solutions.]