Use Maple to complete this worksheet. Save your Maple worksheet as **MapleExercises2_yourname.mw**. Turn in your Maple worksheet via email to crawford@elmhurst.edu by Thursday 02/15 5:00 pm.

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 $y = \dfrac{2x^2 - 3x + 2}{x^2 - 1}$
Make sure the graph looks "nice."

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

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

5. Given $f(x, y, z) = \tan\left(\dfrac{3x + 2y}{z}\right)$, find $f_y(\pi, 2\pi, 3)$.
[Make sure any trig functions are evaluated.]

6. Evaluate the following integrals.

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

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

7. Determine the following limit.
$$\lim_{t \to \infty} \frac{3\,e^{-2t} + 5\,e^{2t}}{2\,e^{-2t} + 3\,e^{2t}}$$

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.
$$3a + 2b - c = 1 \qquad\qquad a - b = 0 \qquad\qquad 2a + 2b + c = 3$$

10. Use Maple to

(a). Graph the functions $y = \sin(2x)$ and $y = \dfrac{1}{2}x + \dfrac{1}{2}$ 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.]