Math 291
Lab 1

Instructions: Use LaTeX to typeset a document containing each component described below. Turn in your lab by submitting it to the appropriate folder in D2L Brightspace. You should submit both your raw .tex file and your compiled document (in .dvi, .ps, or .pdf form, as long as it can compile to that form). You will be graded on both your raw LaTeX code and the accuracy of your compiled document. Note: Since the point of this class is typesetting, I will be picky on what exactly is typeset, so pay attention to details!
You must save your documents with a filename in the form
lastnameLab1.tex
with the only exception being that you may include your first name as well if you want to, as long as the last name is also there.

1. Make a name block for your lab containing your name (on the first line), the name and course number for this class (on the second line), the date (either when submitted or when due, your choice) (on the third line), and "LaTeX Lab 1" (on the fourth line). Your name block should be flush right on the page. [A similar name block should appear on all future labs.]

2. Typeset the following mathematical formulas exactly as they are given below, each on a new line.

    (a) $7x^{15} + 4x^{10} - 9x^3 + 73x - \frac{1}{3}$

    (b) $4x^3 - 7x + \frac{-3}{4} = x^2(x^3 - 7x^2 + 5)$

    (c) $f(x, y, z) = x^3 y^3 z^3 - 7x^2 y z^4 - 12xy^5 z^2$

    (d) $f(x_1, x_2) = 8x_2^4 x_1$

    (e) $\frac{3}{14} + \frac{2}{3} = \frac{37}{42}$

    (f) $\frac{x^2 - 4x - 77}{x + 11}$

    (g) $\frac{d}{dx} e^{3x} = 3e^{3x}$

    (h) $\frac{d}{dx} x^n = nx^{n-1}$

    (i) e^{-x^2}

    (j) $\lim_{x \to 1} f(x) = f(1)$
        [**Note:** The command for limit is \lim.]

    (k) $\cos(3x - 1)$
        [**Note:** Use a guess to get the cosine function that is consistent with the hint for the limit symbol above.]

    (l) $\frac{\frac{1}{x-1} + \frac{1}{x+1}}{\frac{1}{x} - \frac{1}{x+1}}$

    (m) $\frac{1}{2^x} - 2^{\frac{1}{x}} + \frac{1}{2^{\frac{1}{x}}} - 2^{2^x} + 2^{2^{2^x}}$

    (n) Typeset the previous expression again, except surround it with $$ on each side instead of just one $ on each side.

    (o) Typeset the limit expression again from part (2j), except surround it with $$ on each side instead of just one $ on each side.

    (p) $V = \frac{4}{3}\pi r^3$
        [**Note:** The command for π is \pi.]

    (q) $V = \frac{4\pi r^3}{3}$