

## Main Exercises Week 2

MATH 130: Calculus I, Section 2 & 3

Your Name (Print): \_\_\_\_\_

**Follow the general guidelines for the Main Exercises assignments (the salmon colored handout).** Be sure to **staple** together your pages if you have more than one, and include your **name** at the top. Neatness is appreciated, makes a good first impression, and can earn you a bonus point!!!

**Due:** at the beginning of class on Friday, January 26th

**Remember:** Your write-up should be **your own**. You may discuss these problems with others, but **you should be alone when you write them up**, using only outlines of any group or Intern discussions. **EXPLAIN** and **SHOW YOUR WORK!!!** Final answers will not receive full credit without supportive explanations. You may use your own paper on which to write these up.

1. Let  $g(x) = x^2 + 4$ . Find  $f(x)$  such that  $(f \circ g)(x) = x^4 + 6x^2 + 20$ . Justify that your choice of  $f$  is correct.
2. Let  $f(x) = 3x^2 - 2x + 5$ . Simplify the expression  $\frac{f(x+h) - f(x)}{h}$ .
3. Suppose that  $f(x)$  is an even function and  $g(x)$  is an odd function. Determine whether  $j(x) = f(g(x))$  is even, odd or neither. Remember to show details and include at least one full sentence explaining your work. (Hint: Use the definitions of even and odd on page 8 of our text. This should be an algebraic argument.)