

Turn in your solution to at least two of the problems. **Explain your solution in full sentences. Give detailed reasonings.** Include diagrams and figures if appropriate.

Problem 1. Consider a 4×4 chess board. Divide the board into two connected pieces with equal areas with a line along the edges of the board. Construct all such nonequivalent divisions. Two divisions are equivalent if one can be gotten from the other using rotations and reflections.

Problem 2. a. Suppose that $f(4x^2 - 4x + 1) + f(x) = x$. What is $f(1/2)$?
b. Find $g(2)$ if $g(1/x) - 3g(x) = x$ for all nonzero x .

Problem 3. Solve the equation $\lfloor x \rfloor = x^4 - 2x^2$.