Math 1210 Diagnostic-Quiz Name: _____

Closed book and notes. No calculators. Show all work (for partial credit). Your work must justify your answers.

(1) Find the equation of the line through $(1, 3)$ that is perpendicular to the straight line $2x + 7y = 9$.

(2) Simplify completely (combine all exponents with the same base and use positive exponents only):
$(2x^3 - 3x^2)(x^{-3} + x^{-2})$

(3) Find the domain of $f(x) = \dfrac{\sqrt{x-2}}{x^2 - 9}$, expressing your answer in interval notation.

(4) Find all real numbers x satisfying $|5x + 9| \leq 4$.

On my honor as a student, I have neither given nor received aid on this quiz. _____