MATH 251 (PHILLIPS) QUIZ 5, 2 June 2025. 20 minutes; 20 points.

NAME: _____   Student id: _____

    Standard exam instructions apply. In particular, no calculators, no communication devices, and no notes except as 3×5 file card, written on both sides. Also, all notation must be correct, with "=", "lim", etc. everywhere they are supposed to be, and nowhere they are not supposed to be. Write answers on this page. Use the back if necessary. Total: 20 points.

1. (10 points) Find the equation of tangent line to the graph of $f(x) = 3x^2 - x$ at $x = -2$. You need not calculate the derivative directly from the definition.

2. (10 points) Let $f(x) = -x^3 - 6x^2 - 5x + 9$. Find the intervals of concavity and the inflection points of f.