Show all work, including mental steps, in a clearly organized way that speaks for itself. Use proper mathematical notation, identifying expressions by their proper symbols (introducing them if necessary), and use arrows and equal signs when appropriate. Always simplify expressions. BOX final short answers. LABEL parts of problem. Keep answers EXACT (not decimal approximations, if possible).

1. a) State the limit definition of $f'(x)$ and then use it to evaluate the derivative of the function $f(x) = 1 - 2x^2$.

b) Use part a) to write the equation of the tangent line to $f$ at $x = 1$ and then simplify it to slope-intercept form.

Sketch the graph of $f'$ below the graph of $f$ (use open or closed circles at key points for clarity). Explain how each feature of your graph is related to the original graph.