MATH 251 (Spring 2004) Diagnostic Quiz

This quiz does not count towards your grade. No books, notes, or friends!
Show all work. Use extra paper if you need!

(1) Let $f(x) = x^2$.
(a) Compute $f'(3)$

(b) What is the definition of $f'(3)$?

(c) What does $f'(3)$ mean geometrically?

(2) Find (a) $\int_{1/2}^{2} \frac{1}{x}\, dx$

(b) $\int_0^\infty xe^{-x^2}\, dx$

(3) On what intervals is $f(x) = x^3 - 3x^2 + 7x$ increasing?

(4) State the Fundamental Theorem of Calculus.

(5) Let $f(x) = \int_5^x \sin(t^3)\, dt$. What is $f'(10)$?