MATH 105       QUIZ 13       DECEMBER 6, 2004

NAME:  KEY

YOUR GRADE IS BASED ON THE PROCESS AS WELL AS THE FINAL RESULT. SHOW ALL
YOUR STEPS CLEARLY SO YOU WILL BE ELIGIBLE FOR THE MOST PARTIAL CREDIT. YOU
MAY USE A CALCULATOR, BUT NO NOTES, BOOKS, OR OTHER STUDENTS. GOOD LUCK!

1.) (5 pts.) Suppose \( \int_a^b f(x)dx = 8, \int_a^b (f(x))^2 dx = 12, \int_a^b g(t)dt = 2, \) and \( \int_a^b (g(t))^2 dt = 3. \) Find the integral

\[
\int_a^b ((f(x))^2 - (g(x))^2) \, dx.
\]

\[
= \int_a^b (f(x))^2 \, dx - \int_a^b (g(x))^2 \, dx
\]

\[
= 12 - 3 \left[ \text{Note:} \int_a^b (g(t))^2 \, dt = \int_a^b (g(t))^2 \, dt \right]
\]

\[
= 9
\]

2.) (5 pts.) Sketch a function \( F \) such that \( F' = f. \) Let \( F(0) = 1. \)

\[\text{Diagram of } f(x) \text{ and } F(x)\]