Instructor: Prof. A. Suciu **Name:** _____

MTH 1124 **Calculus 2** **Winter 2001**

QUIZ 2

Instructions: Put your name in the blanks above. Put your final answers to each question in the designated spaces on these pages. Show your work—if there is not enough room, use another sheet.

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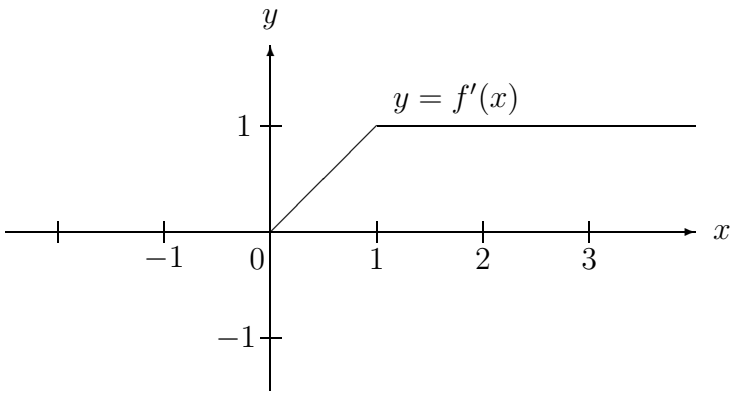
(1) [5 points] Let f be a function. The graph of the derivative f' is shown below. Given that $f(0) = 3$, find $f(1)$ and $f(2)$.



(2) [5 points] Suppose $\int_2^3 f(x)\,dx = 2$, $\int_3^5 f(x)\,dx = 4$, $\int_2^3 (f(x))^2\,dx = 6$, $\int_3^5 (f(x))^2\,dx = 9$. Find:

(a) $\int_2^5 f(x)\,dx =$

(b) $\int_5^2 (f(x))^2\,dx =$

(c) $\int_3^5 \left(3f(x) - 4(f(x))^2\right) dx =$

(d) $\int_2^3 8(f(x))^2\,dx - \left(\int_2^3 5f(x)\,dx\right)^2 =$

(e) $3\int_2^2 (f(x))^2\,dx - \left(\int_3^5 f(x)\,dx\right)^2 + \int_5^5 7f(x)\,dx =$

(3) [4 points] Find the following indefinite integrals.

(a) $\displaystyle\int \left(\sqrt[3]{x} - \frac{1}{\sqrt{x}}\right)\, dx =$

(b) $\displaystyle\int \left(e^{\pi} + 3e^{2t} + \frac{1}{e^t}\right)\, dt =$

(4) [6 points] Using the Fundamental Theorem of Calculus, evaluate the following definite integrals, both *exactly* and *numerically* (to at least 3 significant digits).

(a) $\displaystyle\int_1^2 \left(\frac{x}{3} + \frac{3}{x}\right)\, dx =$

(b) $\displaystyle\int_{\pi/4}^{\pi/2} (2\sin t + \cos t)\, dt =$