Math 120 Spring 2014 Quiz **Two**

SHOW ALL YOUR WORK AND EXPLAIN EVERY ANSWER

Adapted from **Stewart, Section 5.3, Problem 69**. Suppose h is a polynomial function such that

$$h(1) = -2, h'(1) = 2, h''(1) = 3, h(2) = 6, h'(2) = 5, h''(2) = 13$$

For each of the following expressions, evaluate it exactly (if possible). If you can not evaluate the expression, explain why

1 (a) (*2.5 points*) $\int_1^2 h''(s)\, ds$ $= h'(s)\Big|_1^2$ Using the FTC

$= h'(2) - h'(1)$

$= 5 - 2$

$= 3$

1 (b) (*2.5 points*) $\frac{d}{dx}\int_1^2 h(s)\, ds$ $= 0$

Derivative of a constant is zero.

$\int_1^2 h(s)ds$ is just a fancy way of writing a constant

1 (c) (*2.5 points*) $\int_1^2 h(s)\, ds$ Not enough info to evaluate. You need $H(x)$, the anti derivative of $h(x)$, to use the FTC. $H'(x) = h(x)$

$\int_1^2 h(s)ds = H(2) - H(1)$

1 (d) (*2.5 points*) $\frac{d}{dx}\int_1^x h(s)\, ds$ $h(x)$ FTC part 2

$\frac{d}{dx}\int_a^x f(t)dt = f(x)$