

## Warm-up Problems - January 20, 2006

1. Are the following “integral computations” correct? If not, why not and what is the correct integral?

(a)  $\int x^3 dx = \frac{x^4}{4} + C$

(b)  $\int 3^x dx = \frac{3^{x+1}}{x+1} + C$

(c)  $\int \ln x dx = \frac{1}{x} + C$

(d)  $\int x^3(x^2 + 1) dx = \frac{x^4}{4} \left( \frac{x^3}{3} + x \right) + C$

## Lecture Problems

2. (a) Compute the integral using the Fundamental Theorem of Calculus:

$$\int_4^8 \sqrt{2x-7} \, dx$$

- (b) Compute an approximation for the previous integral using a left hand sum with 3 rectangles.