Math 1271 Worksheet 7*

Section 5.1

1. Find the antiderivative of the following functions.

   (a) $x^4 - 2x^3$

   (b) x^{24}

   (c) x^{-1}

   (d) $t^{6/7} - \sqrt{t}$

   (e) $\sin x - \cos x$

   (f) 7

   (g) 0

   (h) $\sec^2 x + \frac{1}{x} + e^x$

   (i) $\frac{\sqrt{t} - t^{7/4}}{t\sqrt{t}}$.

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2. Find f if $f''(x) = 4, f'(0) = 3$, and $f(1) = 6$.

3. (Section 4.9, Example 4) Find f if $f''(x) = 12x^2 + 6x - 4, f(0) = 4$, and $f(1) = 1$.

4. (Section 5.1, Problem 4)

   (a) Estimate the area under the graph of $f(x) = \sin x$ from $x = 0$ to $x = \frac{\pi}{2}$ using four approximating rectangles and right endpoints. Sketch the graph and the rectangles. Is your estimate an underestimate or an overestimate?

   (b) Repeat part (a) using left endpoints.

5. Use Definition 2 (Page 378) to find an expression for the area under the graph of $f(x) = x^2, 0 \leq x \leq 10$ as a limit. Do not evaluate the limit.