Chapter 5 & 6 Review

1. Suppose the rate at which a filter removes sediment from a tank is given by the data below. Use $N = 4$ to find an <u>lower</u> estimate for the amount of sediment removed during the first two hours.

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Time (hr)	0	0.5	1	1.5	2
Rate of Sediment Removal (gr/hr)	8.2	7.5	6.0	5.3	3.9

2. Estimate the area of the region bounded by $f(x) = e^{-x^2}$, the x-axis, $x = 0$, and $x = 0.5$. Estimate the average value of $f(x)$ over the interval [0, 0.5]. Include an illustration of these two quantities.

3. Use the Fundamental Theorem of Calculus to find the exact value of the area bounded by $y = 3\sqrt{x} - 5$, $y = 0$, $x = 4$ and $x = 9$. Include a sketch.

4. A car, initially moving at 88 ft/sec, has a constant deceleration and stops in a distance of 200 feet. Determine the car's deceleration in feet/sec^2. Include a sketch of the velocity graph.

5. Use the graph of $g'(x)$ below to sketch an <u>accurate</u> graph of $g(x)$ so that $g(0) = 5$.

$g'(x)$
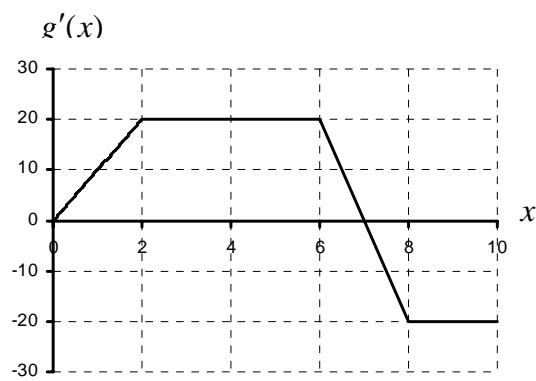
6. Consider $\int_1^x \sin(t^2) dt$.

A. Is this a function of x or t?

B. What does this function represent? Be specific.

C. Give a point on the graph of this function.