Calculus I	**Name:**
Study Guide 26	**Class:**
Due Date:	**Score:**

No Work $\Leftrightarrow$ No Points

Use Pencil Only $\Leftrightarrow$ Be Neat & Organized

1. (3 points) State clearly the general comparison property for integration.

2. (4 points) Use the inequalities $0 \leq \sin x \leq x$ for $0 \leq x \leq 1$ to show $0 \leq \displaystyle\int_0^1 \sin x^2 \, dx \leq \frac{1}{3}$.

2. _____

3. (5 points) Find $\displaystyle\int_{-2}^{4} |x| \, dx$

3. _____

4. (3 points) State clearly the length of a curve using integration.

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5. (5 points) Find the length of the graph of $f(x) = \frac{2}{3}\sqrt{x^3}$ for $0 \leq x \leq 3$.

5. _____

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6. (8 points) Find $f(1)$ and $f''(1)$ for $f(x) = \int_1^{x^2} \frac{1}{1+\sqrt{t}}\, dt$, then discuss its concavity at $(1, f(1))$.

6. _____

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7. Find the volume of the solid obtained when revolving the enclosed region between the graphs of equations given below by the $y-$ axis. Drawing Required.

(a) (5 points) $f(x) = x - 2,\ x = 0,\ y = 2$

(a) _____

(b) (5 points) $f(x) = \sqrt{x},\ x = 0,\ y = 3$

(b) _____

(c) (6 points) $f(x) = x^2,\ g(x) = \sqrt{x}$

(c) _____

(d) (6 points) $f(x) = \sqrt{5 - x},\ x = 1,\ y = 0$

(d) _____