

Please read directions carefully. Raise your hand if you are not sure what a problem is asking.

You must explain your work thoroughly and unambiguously to receive full credit on questions or parts of questions designated as **Work and Answer**.

No calculators or notes are allowed on this quiz.

Please note that there is a problem on the back.

**Multiple Choice.** (9 points) Circle the letter of the best answer.

1.  $\sum_{i=1}^4 i^3 =$

(a) 64

(c) 100

(b) 87

(d) 119

2. The area under the curve  $f(x) = 3x^2$  from  $x = -2$  to  $x = 3$  is

(a)  $\lim_{n \rightarrow \infty} \left( \sum_{i=-2}^3 3x_i^2 \cdot \frac{5}{n} \right)$

(c)  $\lim_{n \rightarrow \infty} \left( \sum_{i=1}^n 3x_i^2 \cdot \frac{3}{n} \right)$

(b)  $\lim_{n \rightarrow \infty} \left( \sum_{i=1}^n 3x_i^2 \cdot \frac{5}{n} \right)$

(d)  $\lim_{n \rightarrow \infty} \left( \sum_{i=1}^5 3x_n^2 \cdot \frac{1}{5} \right)$

3.  $\int_{-1}^4 5 \cos x \, dx =$

(a)  $5 \sin x + C$

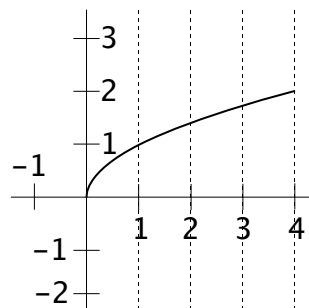
(c)  $5 \sin x \Big|_{-1}^4$

(b)  $5 \cos x$

(d)  $5 \sin x \Big|_{-1}^4$

**Graph.** (5 points)

Estimate the area under the curve  $f(x) = \sqrt{x}$  from  $x = 1$  to  $x = 4$  using 3 rectangles and right endpoints.



Area  $\approx$  \_\_\_\_\_

**Work and Answer.** (6 points) *You must show all relevant work to receive full credit.*

Evaluate the integral  $\int_1^2 \frac{9}{x^5} dx$ .