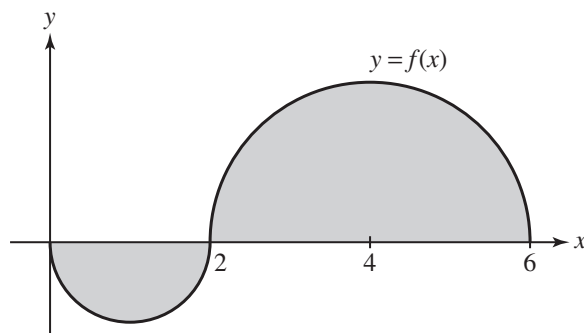


QUESTION #1

TEAM NAME: _____

(1) Evaluate $\int_1^4 f(x) dx$ using the graph below. The two parts of the graph are semicircles.



ANSWER: _____

QUESTION #2

TEAM NAME: _____

(2) Evaluate the indefinite integral:

$$\int x^{-1/5} \sec(x^{4/5}) \tan(x^{4/5}) dx$$

ANSWER: _____

QUESTION #3

TEAM NAME: _____

(3) Evaluate the limit $\lim_{x \rightarrow \infty} \left(1 + \frac{1}{x}\right)^x$.

ANSWER: _____

QUESTION #4

TEAM NAME: _____

(4) Compute the definite integral: $\int_1^2 x \ln x \, dx$.

ANSWER: _____

QUESTION #5

TEAM NAME: _____

(5) Determine the radius of convergence for $\sum_{n=0}^{\infty} \frac{x^{3n+1}}{64}$

ANSWER: _____

QUESTION #6

TEAM NAME: _____

(6) Determine a reduced fraction that has this repeating decimal: $0.217217217\dots$

ANSWER: _____

QUESTION #7

TEAM NAME: _____

- (7) Use the shell method to calculate the volume obtained by rotating the region under the graph of $f(x) = 8 - x^3$ from $0 \leq x \leq 2$ about the x axis.

ANSWER: _____

QUESTION #8

TEAM NAME: _____

(8) Calculate the derivative: $\frac{d}{dx} \int_1^{1/x} \cos^3(t) dt.$

ANSWER: _____

QUESTION #9

TEAM NAME: _____

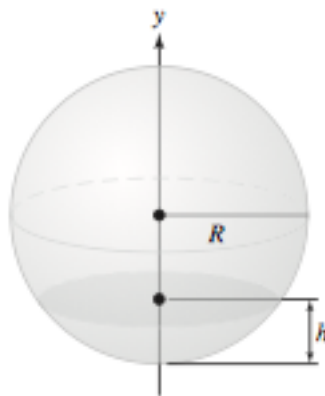
(9) Evaluate the integral using trigonometric substitution: $\int \frac{x^2}{\sqrt{9-x^2}} dx$.

ANSWER: _____

QUESTION #10

TEAM NAME: _____

(10) Find the volume of liquid needed to fill a sphere of radius R to height h .



ANSWER: _____