

Problem Set 2

Group Number:	
Members:	

Problem 1

If R_n is the Riemann sum for $f(x) = 4 + \frac{x^2}{8}, 0 \leq x \leq 4$ with n subintervals and taking sample points to be the right end points, then $R_n =$

Problem 2

$$\lim_{n \rightarrow \infty} \sum_{i=1}^n \frac{1}{n} \cos \left(1 + \frac{i}{n} \right)^2 =$$

(A) $\int_1^2 \cos(1 + x^2) dx.$

(B) $\int_1^2 \cos(x^2) dx.$

(C) $\int_1^2 \cos^2(x) dx.$

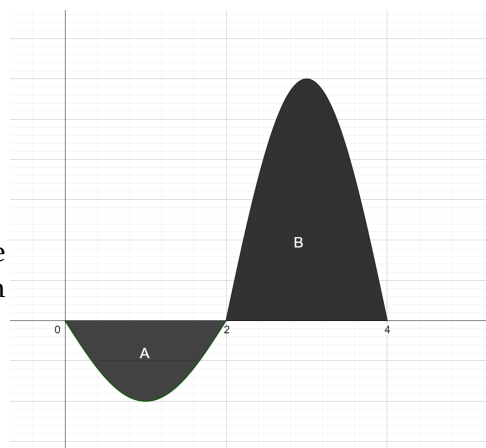
(D) $\int_0^1 \cos(x^2) dx.$

(E) $\int_0^1 \cos(1 + x^2) dx.$

Problem 3

In the figure shown, regions A and B are bounded by the graph of a function f and the x -axis. If the area of region A is $\frac{1}{6}$ and the area of the region B is $\frac{3}{8}$, then

$$\int_0^4 f(x)dx + \int_0^4 |f(x)|dx =$$



Problem 4

If $\int_{-5}^7 f(x)dx = -17$, $\int_{-5}^{11} f(x)dx = 32$, and $\int_8^7 f(x)dx = 5$, then $\int_{11}^8 f(x)dx =$.

Problem 5

If $f(x) = \begin{cases} -x; & -4 \leq x < 0 \\ \sqrt{4-x^2}; & 0 \leq x \leq 2 \end{cases}$, then the value of the integral $\int_{-4}^2 f(x)dx$ by interpreting in terms of area(s) is.

Problem 6

Write the limit as an integral (do not evaluate)

$$\lim_{n \rightarrow \infty} \sum_{i=1}^n \left[1 + \sin \left(1 + \frac{i}{n} \right) \right] \frac{2}{n} =$$

Problem 7

$$\lim_{n \rightarrow \infty} \frac{2}{n^4} (1 + 8 + 27 + \cdots + n^3) =$$

Problem 8

If f is continuous function and

$$2 \leq f(x) \leq 5 \quad \text{for} \quad 3 \leq x \leq 9,$$

then ONE of the following statements is ****FALSE****

(A) $\int_3^9 |f(x)| \, dx \geq 12$

(B) $\int_3^9 (3 - f(x)) \, dx \geq -12$

(C) $\int_3^9 (1 - |f(x)|) \, dx \geq -10$

(D) $\int_3^9 -2f(x) \, dx \leq -24$

(E) $\int_3^9 (f(x))^2 \, dx \geq 24$