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Question 1 **(1 pts)**

Suppose you want to estimate the area under the graph of $f(x) = 1/x$ from $x = 1$ to $x = 2$ using 4 rectangles. What is the base value (Δx) for each rectangle?

A. $\Delta x = 1/2$

B. $\Delta x = 1/4$

C. $\Delta x = 4$

D. $\Delta x = 2$

Question 2 **(1 pts)**

What are the right endpoints for the rectangles in Question 1?

A. $x_1 = 0, x_2 = 1/4, x_3 = 1/2$, and $x_4 = 3/4$.

B. $x_1 = 1, x_2 = 5/4, x_3 = 3/2$, and $x_4 = 7/4$.

C. $x_1 = 5/4, x_2 = 3/2, x_3 = 7/4$, and $x_4 = 2$.

D. $x_1 = 1/4, x_2 = 1/2, x_3 = 3/4$, and $x_4 = 1$.

Question 3 **(1 pts)**

What is the estimated area under the graph $f(x) = 1/x$, given the information in Question 1 and Question 2?

A. ≈ 0.6345

B. ≈ 2.083

C. ≈ 1.83

D. ≈ 0.7595

Question 4 **(1 pts)**

Find the value of $\sum_{i=1}^{5} 2(2i + 1)$.

A. 6

B. 50

C. 70

D. 35

Question 5 **(1 pts)**

Write $1 + \frac{1}{4} + \frac{1}{9} + \frac{1}{16} + \frac{1}{25} + \frac{1}{36}$ in Sigma notation.

A. $\sum_{i=0}^{6} \frac{1}{i^2}$.

B. $\sum_{i=1}^{6} i^2$.

C. $\sum_{i=1}^{6} \frac{1}{2i}$.

D. $\sum_{i=1}^{6} \frac{1}{i^2}$.

Question 6 **(1 pts)**

What does $\int_a^b f(x)\,dx$ mean in words?

A. The area of $f(x)$ from a to b.

B. The definite integral of f from a to b.

C. The limit of $f(x)$ as x approaches $b - a$.

D. The limit of $f(x)$ as a and b approaches infinity.

Question 7 **(1 pts)**

We know that for a continuous function f, $\int_a^b f(x)\,dx = \lim_{n\to\infty} S_n$, where S_n are the Riemann Sums. What does $\int_a^b f(x)\,dx$ represent, if $f(x) \geq 0$?

A. $\lim_{n\to\infty}(S_b - S_a)$.

B. The integral of S_n.

C. The area of $f(x)$ from a to b.

D. The area of the region bounded by the graph of $f(x)$ and the x-axis, from $x = a$ to $x = b$.

Question 8 **(1 pts)**

Evaluate $\int_1^2 x^2\,dx$.

A. 3

B. $\frac{8}{3}$

C. $\frac{7}{3}$

D. 2

Question 9 **(1 pts)**

Suppose $\int_a^b f(x)\,dx = 6$ and $\int_a^b g(x)\,dx = 8$. What is $\int_a^b (f(x) + g(x))\,dx$?

A. 14

B. 2

C. 48

D. -2

Question 10 **(1 pts)**

Suppose $\int_0^2 f(x)\,dx = 9$ and $\int_2^8 f(x)\,dx = 22$. What is $\int_0^8 f(x)\,dx$?

A. -5

B. 204

C. 5

D. 31