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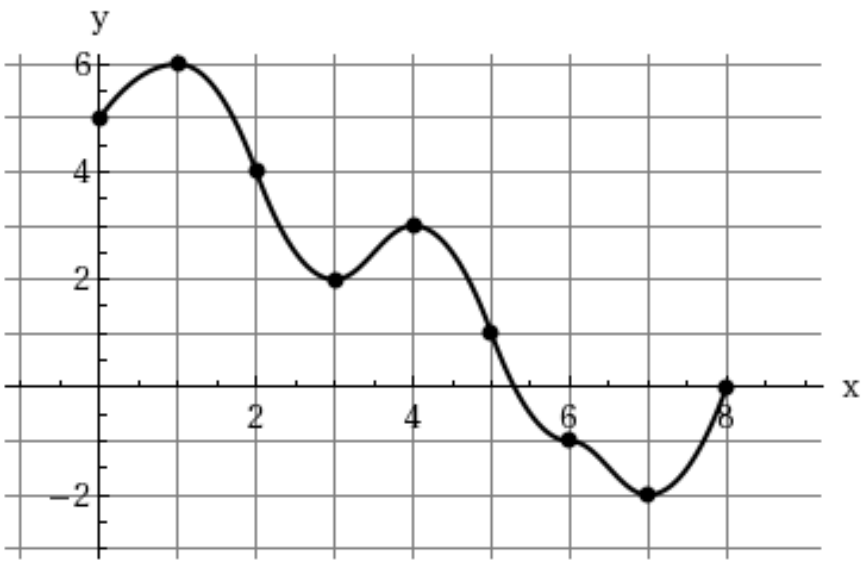
12. The graph of a function $f(x)$ on the interval $[0,8]$ is shown in the figure below. Estimate $\int_0^8 f(x)\,dx$ by computing the Riemann sum using four subintervals of equal length and choosing the evaluation points to be the midpoint of the subintervals.



(a) 8

(b) 10

(c) 12

(d) 14

(e) 22

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15. Evaluate the integral below.

$$\int_0^{12} \frac{3}{\sqrt{1+2x}}\,dx$$

(a) 6

(b) 8

(c) 10

(d) 12

(e) 16

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11. Evaluate

$$\int_{1}^{e^3} \frac{\ln\sqrt{x}}{x}\,dx$$

A) $\frac{1}{2}$ B) $\frac{3}{4}$ C) $\frac{5}{4}$ D) $\frac{3}{2}$ E) $\frac{9}{4}$ F) $\frac{7}{2}$ G) $\frac{9}{2}$ H) $\frac{11}{2}$

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13. Evaluate

$$\frac{1}{2^9}\int_0^{64}\left(4\sqrt[3]{x}-\sqrt{x}\right)dx$$

A) $\frac{1}{6}$ B) $\frac{1}{4}$ C) $\frac{2}{5}$ D) $\frac{1}{3}$ E) $\frac{1}{2}$ F) $\frac{3}{4}$ G) $\frac{5}{6}$ H) 1

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1. Suppose that f and g are integrable and that

$$\int_1^2 f(x)\,dx = -4, \quad \int_1^5 f(x)\,dx = 6, \quad \int_1^5 g(x)\,dx = 8.$$

Find

I)

$$\int_5^1 g(x)\,dx$$

II)

$$\int_2^5 f(x)\,dx$$

III)

$$\int_1^5 \left[4f(x) - g(x)\right]dx$$

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3. Let

$$y = \int_0^{e^{x^2}} \frac{1}{\sqrt{t}}\, dt$$

Find $y'(2)$.

A) e

B) e^2

C) e^4

D) $2e$

E) $2e^2$

F) $4e^2$

G) 2

H) 4

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4. Evaluate

$$\int_0^4 \frac{6x}{\sqrt{x^2+9}}\,dx$$

A) $\frac{1}{2}$

B) 1

C) 2

D) 4

E) 6

F) 8

G) 12

H) 16

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12. Let

$$L = \int_1^{e^3} 3x^{-1}dx \qquad M = \int_0^4 \frac{5\sqrt{x^3}}{8}dx \qquad N = \int_0^{\ln 2} 6e^{3x}dx$$

Find $L + M - N$.

A) 1 B) 2 C) 3 D) 4

E) 5 F) 6 G) 7 H) 8

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Answers:

Spring 2013 # 12 : **D**

Spring 2013 # 15 : **D**

Fall 2012 # 11 : **E**

Fall 2012 # 13 : **G**

Spring 2012 # 1 : I) -8 II) 10 III) 16

Spring 2012 # 3 : **F**

Spring 2012 # 4 : **G**

Fall 2011 # 12 : **C**