Math 125 HW_1C (8409638)

Due: Wed Jan 13 2016 11:00 PM PST

Question	1	2	3	4	5	6	7	8	9	10	11	12

1. Question Details SCalcET7 5.2.003.MI. [1535313]

If $f(x) = e^x - 3$, $0 \le x \le 2$, find the Riemann sum with $n = 4$ correct to six decimal places, taking the sample points to be midpoints.

$M_4 =$ ____

2. Question Details SCalcET7 5.2.004. [1535220]

(a) Find the Riemann sum for $f(x) = 3 \sin x$, $0 \le x \le 3\pi/2$, with six terms, taking the sample points to be right endpoints. (Round your answers to six decimal places.)

$R_6 =$ ____

(b) Repeat part (a) with midpoints as the sample points.

$M_6 =$ ____

3. Question Details SCalcET7 5.2.007. [1815537]

A table of values of an increasing function f is shown. Use the table to find lower and upper estimates for $\int_{10}^{30} f(x)\, dx$.

lower estimate ____
upper estimate ____

x	10	14	18	22	26	30
$f(x)$	−15	−5	−4	1	6	9

4. Question Details SCalcET7 5.2.009. [1776323]

Use the Midpoint Rule with the given value of n to approximate the integral. Round the answer to four decimal places.

$$\int_0^{40} \sin \sqrt{x}\, dx, \quad n = 4$$

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5. Question Details SCalcET7 5.2.017.MI. [1835673]

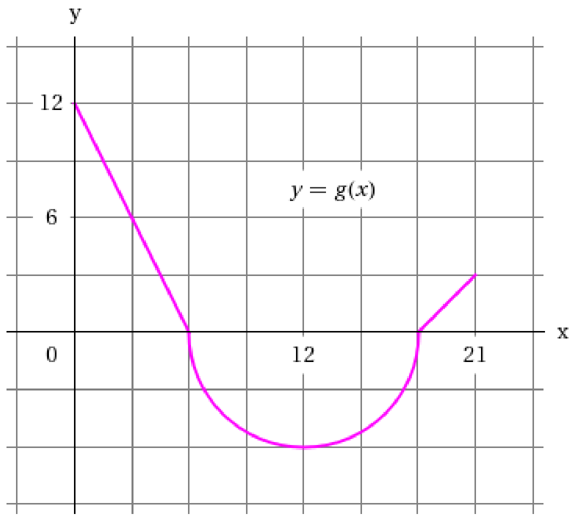
Express the limit as a definite integral on the given interval.

$$\lim_{n \to \infty} \sum_{i=1}^{n} x_i \ln(2 + x_i^2)\, \Delta x,\ [0, 3]$$

$$\int_0^3 \boxed{}\, dx$$

6. Question Details SCalcET7 5.2.034.MI. [1912810]

The graph of g consists of two straight lines and a semicircle. Use it to evaluate each integral.



(a) $\int_0^6 g(x)\,dx$

(b) $\int_6^{18} g(x)\,dx$

(c) $\int_0^{21} g(x)\,dx$

7. Question Details SCalcET7 5.2.040. [1865736]

Evaluate the integral by interpreting it in terms of areas.

$$\int_0^6 |x - 3|\,dx$$

8. Question Details SCalcET7 5.2.048.MI. [1535272]

If $\int_1^5 f(x)\,dx = 12$ and $\int_4^5 f(x)\,dx = 5.1$, find $\int_1^4 f(x)\,dx$.

9. Question Details SCalcET7 5.2.054. [1647605]

Suppose f has absolute minimum value m and absolute maximum value M. Between what two values must $\int_1^3 f(x)\,dx$ lie?

[ ] (smaller value)

[ ] (larger value)

Which property of integrals allows you to make your conclusion?

- $\int_a^a f(x)\,dx = 0$
- $\int_a^c f(x)\,dx + \int_c^b f(x)\,dx = \int_a^b f(x)\,dx$
- If $m \le f(x) \le M$ for $a \le x \le b$, then $m(b - a) \le \int_a^b f(x)\,dx \le M(b - a)$.
- If $f(x) \ge 0$ for $a \le x \le b$, then $\int_a^b f(x)\,dx \ge 0$.
- $\int_a^b f(x)\,dx = -\int_b^a f(x)\,dx$

10. Question Details SCalcET7 5.2.061. [1835910]

If $m \le f(x) \le M$ for $a \le x \le b$, where m is the absolute minimum and M is the absolute maximum of f on the interval $[a, b]$, then

$$m(b - a) \le \int_a^b f(x)\,dx \le M(b - a).$$

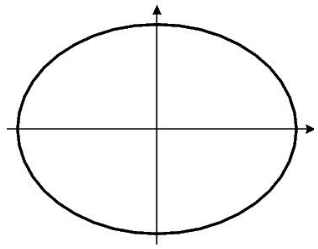
Use this property to estimate the value of the integral.

$$\int_{\pi/8}^{\pi/6} 7\tan 2x\,dx$$

[ ] (smaller value)

[ ] (larger value)

11. Question Details 125HW1.4_v1 [1681532]



The equation

$$\frac{x^2}{16} + \frac{y^2}{9} = 1$$

defines an ellipse, which is graphed above. In this excercise we will approximate the area of this ellipse.

(a) To get the total area of the ellipse, we could first find the area of the part of the ellipse lying in the First Quadrant, and then multiply by what factor? [ ]

(b) Find the function $y=f(x)$ that gives the curve bounding the top of the ellipse. [ ]

(c) Use $\Delta x=1$ and midpoints to approximate the area of the part of the ellipse lying in the First Quadrant. [ ]

(d) Approximate the total area of the ellipse. [ ]

12. Question Details 125HW1.5_v1 [1681543]

For the following problems, the units of a variable are given along with the units for a function (or two functions). Give the units of each definite integral.

(a) If x is in "seconds" and $f(x)$ is in "feet/second" then $\int_a^b f(x)\,dx$ is in

- ○ feet/sec^2
- ○ feet/sec
- ○ feet
- ○ feet·sec

(b) If t is in "seconds" and $g(t)$ is in "feet/seconds^2" then $\int_a^b g(t)\,dt$ is in

- ○ feet/sec^2
- ○ feet/sec
- ○ feet
- ○ feet·sec

(c) If x is in "days" and $f(x)$ is in "degrees F" then $\int_a^b f(x)\,dx$ is in

- ○ days
- ○ (degrees F)/day
- ○ degrees F
- ○ (degrees F)·days

(d) If x is in "hours" and $g(x)$ is in "kilowatts" then $\int_a^b g(x)\,dx$ is in

- ○ kilowatts
- ○ hours
- ○ kilowatts/hour
- ○ kilowatts·hours

(e) If L is in "meters" and $f(L)$ is in "square meters" then $\int_a^b f(L)\,dL$ is in

- ○ meters^3
- ○ meters^2
- ○ meters
- ○ 1/meters

(f) If t is in "minutes," $g(t)$ is in "gallons/foot," and $v(t)$ is in "feet/minute," then $\int_a^b g(t)v(t)\,dt$ is in

- ○ gallons
- ○ gallons/minute
- ○ (gallons·minutes)/foot
- ○ (gallons·feet)/minute

(g) If s is in "seconds" and $f(s)$ is in "feet/second" then $\int_a^b (f(s))^2\,ds$ is in

- ○ feet^2/sec^2
- ○ feet^2/sec
- ○ feet
- ○ feet·sec

(h) If x is in "days" and $f(x)$ is in "pounds" then $\int_a^b \frac{1}{f(x)}\,dx$ is in

- ○ 1/pounds
- ○ pounds
- ○ days/pound
- ○ pounds·days

(i) If x is in "inches," $A(x)$ is in "square inches," and $d(x)$ is in "pounds per cubic inch," then $\int_a^b A(x)d(x)\,dx$ is in

- pounds/inches^3
- pounds/inches^2
- pounds/inch
- pounds

(j) If x is in "days" and $f(x)$ is in "flu cases per day" then $\int_a^b f(x)\,dx$ is in

- (flu cases)/day
- flu cases
- (flu cases)·days
- days/(flu case)

Assignment Details