5.2

Robriana Johnson
Section 2
definite Integral

1) $\displaystyle\int_{\frac{\pi}{2}}^{\frac{3\pi}{2}} \frac{100}{10\sqrt{100-x^2}}\,dx$

2) $\displaystyle\int_{1}^{6} \frac{1}{e}\,dx$

Karen Clark
5.3

① $\int_{1}^{2} \frac{v^3 + 3v^6}{v^4}\,dv$

② $\int_{0}^{\pi/3} \frac{\sin\theta + \sin\theta\tan^2\theta}{\sec^2\theta}\,d\theta$

Catherine Yandis

$\boxed{5.4}$

Use Part 1 of the Fundamental Theorem of Calculus to find the derivative of the function.

7) $g(x) = \int_1^x \frac{1}{t^3+1}\, dt$

8) $g(y) = \int_2^y t^2 \sin t \, dt$

Tim B.
sec A
Q

5.5

1. Evaluate the indefinite integral:

$$\int \frac{dx}{5-3x}$$

2. Evaluate the definite integral:

$$\int_0^1 x^2 (1+2x^3)^5 \, dx$$

Section 5.5: U-Substitution

Andrew Mulhausen

1. $\int (3x-2)^{20}\,dx$

2. $\int (x^2+1)(x^3+3x)^4\,dx$

Nick Watson

5.6 Integration By Parts

1. $$\int_0^{\pi} t \sin 3t \, dt$$

2. $$\int_0^{1} \frac{x}{e^{2x}} \, dx$$

Emily McClure · Section 2 · PARTIAL FRACTIONS

5.7

1] $\int \frac{5x-4}{2x^2+x-1}\,dx$

2] $\int \frac{3x^3-x^2+19x-9}{x^4+18x^2+81}\,dx$

Toffee Jiaravanon

5.7 Partial Fractions

Write out the form using partial fraction expansion on the formula,

1. $$\frac{1}{x^3 + 2x^2 + x}$$

Evaluate the integral using partial fractions

2. $$\int \frac{2x^2 + 5}{(x^2+1)(x^2+4)}\,dx$$

Chelsea Marshall
TRIG INTEGRALS
5.7

QUESTIONS

1) $\int (\sin^2 x)(\cos^3 x)\,dx$

2) $\int \cos^2 x\,dx$

Evaluate the integral.

Daniela silva
section 5.7
trig substitution

16. $$\int_0^{2\sqrt{3}} \frac{x^3}{\sqrt{16-x^2}}\,dx$$

18. $$\int \frac{x^3}{\sqrt{16-x^2}}$$

Trig Substitution (5.7)
Problems

Alix Naugler
Math 151-2

1. $\int \frac{dx}{x^2\sqrt{x^2+4}}$

2. $\int \frac{\sqrt{9-x^2}}{x^2}\,dx$

Tables of Integrals

Alisa Mackesy
5.8

1) $\int x^3 \sin(x)\,dx$

2) $\int \tan^3(\pi x)\,dx$

Section 5.9 - Approximate integration

15. $\displaystyle\int_1^5 \frac{\cos x}{x}\,dx$, $n=8$

TJ Hastings
good luck to all on finals. Have fun.

Use a) Trapezoid rule, b) the m.p. rule, and c) Simpsons rule to approximate the given integral with the specified value of n

*Note Trap =

$$\int_a^b f(x)\,dx \approx T_n = \frac{\Delta x}{2}\left[f(x_0) + 2f(x_1) + 2f(x_2) + 2f(x_{n-1}) + f(x_n)\right]$$

where $\Delta x = (b-a)/n$

MP =

$$\int_a^b f(x)\,dx \approx M_n = \Delta x\left[f(\bar{x}_1) + f(\bar{x}_2) + \dots f(\bar{x}_n)\right]$$

where $(\bar{x}_n)$ is just the average of the two x values you plugged in.

Simpsons =

$$\int_b^a f(x)\,dx \approx S_n\ \frac{\Delta x}{3}\left[f(x_0) + 4f(x_1) + 2f(x_2) + 4f(x_3) + \dots\right.$$
$$\left. 2f(x_{n-2}) + 4f(x_{n-1}) + f(x_n)\right]$$

Comparison Test for Integrals
Section 5.10 p420-422

Alexa Villaseñor

43. $\int_0^\infty \frac{x}{x^3+1}\,dx$

48. $\int_0^\pi \frac{\sin^2 x}{\sqrt{x}}\,dx$

Improper Integrals

Sara Aranda
5.10

① Compute $\int_{1}^{\infty} \frac{dx}{(5x+2)^2}$

② $\int_{0}^{1} \frac{\ln x}{x^{1/2}} \, dx$

Evaluate the integral § 5.10

Xiaoye Yang

Improper Integra

(1) $\int_{-\infty}^{\infty} x e^{-x^2} dx$

(2) $\int_{0}^{33} (x-1)^{-\frac{1}{5}} dx$

Matt Laurent
Section 2

6.1 Problems

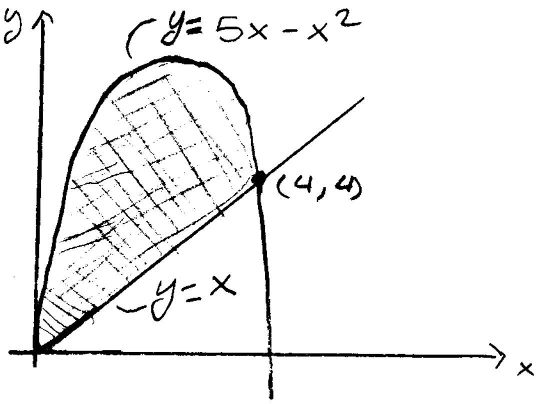
① Find the area of the region bounded by $y = x^2$ and $y^2 = x$

② Cars driven by Chris and Kelly are side by side at the start of the race. Using the table that illustrates their velocities (in mph) determine with Simpson's rule how much farther Kelly travels than Chris in the first 10 seconds.

t	0	1	2	3	4	5	6	7	8	9	10
V_C	0	20	32	46	54	62	69	75	81	86	90
V_K	0	22	37	52	61	71	80	86	93	98	102

Metaeb Alohali 6.1

1. Find the area of the shaded region.



2. Sketch the region enclosed by the given curves. Then find the area of the enclosed region.

$y = x^2$, $y^2 = x$

6.2 Meredith Hoggatt
INTEGRALS & VOLUME
PROBLEMS.

9) $y=x$ & $y=\sqrt{x}$ about $y=1$
Find the volume of the solid obtained by rotating the region bounded by the given curves about the specified line. Sketch the region, the solid and a typical disk or washer.

31) Find the volume of a right circular cone with height h and base radius r.

6.2: Volumes

Sabrina Lucero

Find the volume of the solid obtained by rotating the region bounded by the given curves about the specified line. Sketch the region, the solid and a typical disk or washer.

1. $y = \ln x, y = 1, y = 2, x = 0$; about the y-axis

2. $y = x, \ y = \sqrt{x}$; about $y = 1$

Section 6.4: Arc Length (Problems)

Rachel Lloyd

1) Find the exact length of the curve.

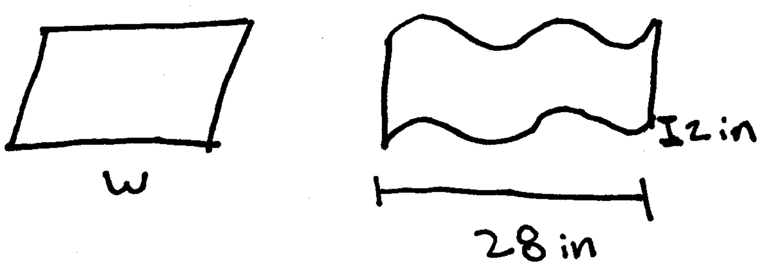
$$x = y^{3/2}, \quad 0 \le y \le 1$$

2) A manufacturer of corrugated metal roofing wants to produce panels that are 28 in. wide and 2 in. thick, by processing flat sheets of metal (as shown in the figure). The profile of the roofing takes the shape of a sine wave, with the equation:

$$y = \sin\left(\frac{\pi x}{7}\right).$$

What width w of the flat sheet is needed to make a 28 in. panel? Use your calculator to evaluate the integral.

Fig. 1.



Section 6.5

Jacqueline Maida
Section 2

4. Find the average value of the function on the given interval.

$$f(\theta) = \sec^2\left(\frac{\theta}{2}\right) \qquad \left[0, \frac{\pi}{2}\right]$$

16. If a cup of coffee has temperature 95°C in a room where the temperature is 20°C, then, according to Newton's Law of Cooling, the temperature of the coffee after t minutes is $T(t) = 20 + 75e^{-\frac{t}{50}}$. What is the average temperature of the coffee during the first half hour?

Mark Hupp
Section 8 6
Work (non liquid)

Problem # 13(p473)
-A cable that weighs 2lb/ft is used to lift 800lbs of coal up a mine shaft 500ft deep. Find the work done.

Problem #27 (p474)
a) Newtons Law ogg Gravitation states two bodies with masses m1,m2 attract each other with a force

$$= \frac{G(m1)(m2)}{r^2}$$

where r is the distance between the bodies, and G is a gravitational constant. If one of the bodies is fixed, find the work needed to move the other from r=a to r=b

b)Find the work required to launch a 1000Kg satellite 1000Km vertically into orbit.
Assume the earths mass =5.98x10^24Kg, radius of the earth =6.37x10^6 and G =6.67x10^-11 $\frac{Nm^2}{Kg^2}$

(13) A cable that weighs 21 lb/ft is used to lift 800 lb of coal up mine shaft 500 ft deep. Find the work done.

(11) Show how to approximate the required work by Reimann sum. Then express the work as an integral and evaluate it.

(a) How much work is done in pulling the rope to the top of the building?

(b) How much work is done in pulling half the rope to the top of the building?

Section 6.6

Jamal

Jamal

6.7 Marc Tang

Consumer surplus

1) A demand curve is given by $p = 950/(x+8)$. Find the Consumer surplus when the selling price is \$10.

2) The demand function for a commodity is given by

$p = 2000 - 0.1x - 0.01x^2$

Find the consumer surplus when the sales level is 100.

Mohamed Al Hosani

Chapter 8.1

Review Questions

Question 1: Determine whether the Sequence Converges or diverges. If it Converges, Find the limit.

30) $a_n = \dfrac{\sin 2n}{1+\sqrt{n}}$

Question 2: Determine whether the sequence is increasing, decreasing, or not monotonic. Is the Sequence bounded

52) $a_n = n + \dfrac{1}{n}$

8.1 Connor Stearns

Determine whether the sequence converges or diverges. If it converges, find the limit.

11) $a_n = \dfrac{3+5n^2}{n+n^2}$

Determine whether the sequence is increasing, decreasing, or not monotonic. Is the sequence bounded?

50) $a_n = \dfrac{2n-3}{3n+4}$

Geometric Series

8.2

Tucker Reiland

Determine whether the geometric series is convergent or divergent. If it is convergent, find its sum.

11) $3 - 4 + \frac{16}{3} - \frac{64}{9} + \ldots$

13) $10 - 2 + 0.4 - 0.08 + \ldots$

Joylene Aguirre, sec. 3
Topic: 8.2

Determine whether the series is convergent or divergent. If it is convergent, find the sum.

1.) $$\sum_{n=1}^{\infty} \frac{n^2 + 2n + 1}{500n^2 + 2n + 1}$$

2.) $$\sum_{n=\emptyset}^{\infty} \frac{1}{n^2 + 3n + 2}$$

Geometric Series

① $\displaystyle\sum_{n=0}^{\infty} \frac{\pi^n}{3^{n+1}}$

② $\displaystyle\sum_{n=0}^{10} \left(\frac{3}{2}\right)^n$

③ $\displaystyle\sum_{n=1}^{\infty} 7(0.8)^{n-1}$

8.2 not geometric series

Eric Straka

21. Determine whether

$\sum_{k=2}^{\infty} \frac{k^2}{k^2-1}$ is convergent or divergent. If it is convergent, find its sum.

36. $.\overline{73} = .737373...$

Express the number as a ratio of integers

Sarah Kappler
8.3

1). Use the Integral Test to determine if the integral converges or diverges.

$$\sum_{n=1}^{\infty} \frac{1}{n^5}$$

2). Determine whether the series is convergent or divergent.

$$\sum_{n=1}^{\infty} \frac{n^2-5n}{n^3+n+1}$$

8.4 - Other convergence tests

Dante Enriquez

7.) Test the series for convergence or divergence.

$$\sum_{n=1}^{\infty} (-1)^n \frac{3n-1}{2n-1}$$

GOOD LUCK!

29.) $$\sum_{n=1}^{\infty} \frac{10^n}{(n+1)4^{2n+1}}$$

Determine if the series is absolutely convergent.

Sten Golds

Alternating Series (and Estimatio

1.) Approximate the sum of the series $\sum_{n=1}^{\infty} \frac{(-1)^{n-1} n^2}{10^n}$ correct to four decimal places

2.) Find the sum of $\frac{1}{1 \cdot 2} - \frac{1}{3 \cdot 2^3} + \frac{1}{5 \cdot 2^5} - \frac{1}{7 \cdot 2^7} + \ldots$

ALTERNATING 8.4 SERIES

MICHAEL POWER

USE THE ALTERNATING SERIES TEST TO FIND WHETHER THE SERIES CONVERGES OR DIVERGES.

1) $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{2n+1}$

2) $\displaystyle\sum_{n=1}^{\infty} (-1)^{n+1} \frac{n}{n^2+9}$

Jenny Serlucco

8.5 Power Series Problems

1. Find the radius of convergence & interval of convergence of the series.

a) $\sum_{n=1}^{\infty} n!(2x-1)^n$

2. The function J_1 defined by

$$J_1(x) = \sum_{n=0}^{\infty} \frac{(-1)^n x^{2n+1}}{n!(n+1)!\,2^{2n+1}}$$

is the Bessel function of order 1.

a) Find its domain.

Calc II

Almonther Alshareef

8.6: 3, 13

1) Find a power series ~~and~~ representation for the function and determine the interval of convergence.

$$f(x) = \frac{1}{1+x}$$

2) Find a power series representation for the function and determine the radius of convergence.

$$f(x) = \ln(5-x)$$

1. Find the Maclaurin series of x [illegible]s(x)

2. Find the Maclaurin series of xe[illegible]

Justin Marcum
Section 3[illegible]
Making new
Maclaurin Series

8.7

Constructing MacLaurin Series
Holly Fuhre
(problems)

1. Find the Maclaurin series for $f(x)$

$f(x) = (1-x)^{-2}$

2. Find the Maclaurin series for $f(x)$

$f(x) = e^{5x}$

Using MacLaurin Series 8.7 Quinn Cantrell
Sec 3

① Let $f(x) = \cos(2x) - 1 + 2x^2$.

ⓐ Find the first two non-zero terms in the MacLaurin series expansion of f.

ⓑ Using the expansion found in part ⓐ, compute the limit:

$$\lim_{x \to 0} \frac{\cos(2x) - 1 + 2x^2}{x^4}.$$

② Expand the function $f(x) = \sin(3x^2)$ into a power series and use its expansion in order to compute $f^{(14)}(0)$.

Berea Bearyman
Review Problems
12/11/13

Section 8.8

Applications of Taylor Polynomials

(13) (a). Approximate f by a Taylor polynomial with degree n at the number a.

(b) Use Taylor's Inequality to estimate the accuracy of the approximation $f(x) \approx T_n(x)$ when x lies in the given interval.

(c). Check your result in part (b) by graphing $|R_n(x)|$.

(25) Use the Alternating Series Estimation Theorem or Taylor's Inequality to estimate the range of values of x for which the given approximation is accurate to within the stated error. Check your answer graphically