MA 16200 Exam II, Oct 19, 2017

Name ____

10–digit PUID number ______________________________________

Recitation Instructor ______________________________________

Recitation Section Number and Time ____________________________

Instructions: **MARK TEST NUMBER 13 ON YOUR SCANTRON**

1. Do not open this booklet until you are instructed to.
2. Fill in all the information requested above and on the scantron sheet. On the scantron sheet fill in the little circles for your name, section number and PUID.
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9. Some useful formulas:

$$\sin(a+b) = \sin a\cos b + \cos a \sin b \qquad 1-\cos 2a = 2\sin^2 a$$

$$\cos(a+b) = \cos a\cos b - \sin a \sin b \qquad 1+\cos 2a = 2\cos^2 a$$

$$\int \sec x \, \tan x \, dx = \sec x + C \qquad \int \sec^2 x \, dx = \tan x + C$$

$$\int \frac{1}{x^2+a^2} dx = \frac{1}{a}\tan^{-1}\left(\frac{x}{a}\right) + C \qquad \int \frac{1}{\sqrt{x^2-a^2}} dx = \sin^{-1}\left(\frac{x}{a}\right) + C$$

Questions

1. $\displaystyle\int_0^{3/2} \frac{1}{4y^2+9}\,dy =$

A. $\pi/6$

B. $3\pi/16$

C. $\pi/24$

D. $\pi/12$

E. $2\pi/9$

2. $\displaystyle\int_2^{\infty} \frac{2+u}{u^2}\,du =$

A. 1

B. 2

C. 1/2

D. The integral is divergent

E. $\ln 2$

3. Find the x-coordinate, $\bar{x}$, of the centroid for the region bounded by $y = 2x$ and $y = x^2$.

A. 2/3

B. 5/3

C. 2

D. 3/2

E. 1

4. Consider the two series

$$\sum_{n=0}^{\infty} \frac{n^2 - 1}{3n^4 + 1}, \qquad \sum_{n=0}^{\infty} \frac{1}{\sqrt{n^2 + 1}}.$$

A. Both are convergent

B. Both are divergent

C. The first one is convergent while the second one is divergent

D. The first one is divergent while the second one is convergent

E. None of the above

5. Find the length of the curve $y = f(x)$ from $x = 0$ to $x = \pi/3$, given its derivative $f'(x) = \sqrt{\sec^2 x \tan^2 x - 1}$.

A. 2

B. $\sqrt{3}/3$

C. 4

D. $\sqrt{2}$

E. 1

6. The area of the surface obtained by revolving the curve $y = 2\sqrt{x}$ from $(0, 0)$ to $(1, 2)$ about the $x-$axis is:

A. $2\pi/3$

B. 8π

C. $8\pi(\sqrt{2} - 1)/3$

D. $8\pi(2\sqrt{2} - 1)/3$

E. $4\pi(\sqrt{2} - 1)/3$

7. $\int_0^{\pi/2} \cos^4 x\, dx =$

A. $\pi/6$

B. $2\pi/9$

C. $3\pi/16$

D. $\pi/5$

E. $5\pi/8$

8. To compute $\displaystyle\int \frac{x^2+1}{x^2-4x+4}\, dx$, one should reduce the integrand to

A. $\frac{A}{x-2} + \frac{B}{x-2}$

B. $x + \frac{A}{x-2} + \frac{B}{(x-2)^2}$

C. $\frac{A}{x-2} + \frac{B}{(x-2)^2}$

D. $1 + \frac{A}{x-2} + \frac{B}{(x-2)^2}$

E. $\frac{A}{x^2} + \frac{B}{x} + C$

9. $\displaystyle\int_0^{\pi/2} \sin^3 t \cos^4 t\, dt =$

A. 5/12

B. 1/7

C. 2/35

D. 3/28

E. 5/16

10. To compute $\displaystyle\int_0^1 \frac{x^2}{\sqrt{x^2-2x+2}}\, dx$, the first step is to reduce the integral to:

A. $\int_0^{\pi/2} \sin^2 t \tan t\, dt$

B. $\int_{-\pi/4}^{\pi/4} (1+\sin t)^2 \tan t\, dt$

C. $\int_{-\pi/4}^{0} (1+\tan t)^2 \sec t\, dt$

D. $\int_0^{\pi/4} \tan^2 t \sec t\, dt$

E. $\int_0^{\pi/2} \sin^2 t(1+\sec t)\, dt$

11. Find all p such that the series $\sum_{k=1}^{\infty} \sqrt{\frac{k^4}{k^p + 2}}$ converges.

A. $p > 1$

B. $p > 5$

C. $p \geq 6$

D. $p > 6$

E. $p > 7$

12. $\sum_{k=0}^{\infty} \frac{2 + 2^k}{3^k} =$

A. ∞

B. 3

C. 8/3

D. 6

E. 14/33

MA 16200 Exam II, Oct 19, 2017

Name ____

10–digit PUID number ____________________________________

Recitation Instructor ____________________________________

Recitation Section Number and Time ___________________________

Instructions: **MARK TEST NUMBER 24 ON YOUR SCANTRON**

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$$\cos(a+b) = \cos a\cos b - \sin a \sin b \qquad 1+\cos 2a = 2\cos^2 a$$

$$\int \sec x\,\tan x\,dx = \sec x + C \qquad \int \sec^2 x\,dx = \tan x + C$$

$$\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\tan^{-1}\left(\frac{x}{a}\right) + C \qquad \int \frac{1}{\sqrt{x^2-a^2}}dx = \sin^{-1}\left(\frac{x}{a}\right) + C$$

Questions

1. $\int_0^{\pi/2} \cos^4 x \, dx =$

A. $\pi/6$

B. $3\pi/16$

C. $2\pi/9$

D. $\pi/5$

E. $5\pi/8$

2. To compute $\displaystyle\int \frac{x^2+1}{x^2-4x+4}\, dx$, one should reduce the integrand to

A. $\frac{A}{x^2} + \frac{B}{x} + C$

B. $\frac{A}{x-2} + \frac{B}{x-2}$

C. $x + \frac{A}{x-2} + \frac{B}{(x-2)^2}$

D. $\frac{A}{x-2} + \frac{B}{(x-2)^2}$

E. $1 + \frac{A}{x-2} + \frac{B}{(x-2)^2}$

3. $\displaystyle\int_0^{\pi/2} \sin^3 t \cos^4 t \, dt =$

A. 2/35

B. 5/12

C. 1/7

D. 3/28

E. 5/16

4. To compute $\displaystyle\int_0^1 \frac{x^2}{\sqrt{x^2 - 2x + 2}}\, dx$, the first step is to reduce the integral to:

A. $\int_0^{\pi/2} \sin^2 t \tan t \, dt$

B. $\int_0^{\pi/2} \sin^2 t (1 + \sec t) \, dt$

C. $\int_{-\pi/4}^{\pi/4} (1 + \sin t)^2 \tan t \, dt$

D. $\int_{-\pi/4}^{0} (1 + \tan t)^2 \sec t \, dt$

E. $\int_0^{\pi/4} \tan^2 t \sec t \, dt$

5. $\displaystyle\int_0^{3/2} \frac{1}{4y^2+9}\,dy =$

A. $\pi/6$

B. $3\pi/16$

C. $2\pi/9$

D. $\pi/24$

E. $\pi/12$

6. $\displaystyle\int_2^{\infty} \frac{2+u}{u^2}\,du =$

A. 1

B. 2

C. 1/2

D. $\ln 2$

E. The integral is divergent

7. Find the x-coordinate, $\bar{x}$, of the centroid for the region bounded by $y = 2x$ and $y = x^2$.

A. 1

B. 2/3

C. 5/3

D. 2

E. 3/2

8. Consider the two series

$$\sum_{n=0}^{\infty} \frac{n^2 - 1}{3n^4 + 1}, \qquad \sum_{n=0}^{\infty} \frac{1}{\sqrt{n^2 + 1}}.$$

A. Both are convergent

B. Both are divergent

C. The first one is convergent while the second one is divergent

D. The first one is divergent while the second one is convergent

E. None of the above

9. Find the length of the curve $y = f(x)$ from $x = 0$ to $x = \pi/3$, given its derivative $f'(x) = \sqrt{\sec^2 x \tan^2 x - 1}$.

A. 2

B. $\sqrt{3}/3$

C. 1

D. 4

E. $\sqrt{2}$

10. The area of the surface obtained by revolving the curve $y = 2\sqrt{x}$ from $(0, 0)$ to $(1, 2)$ about the $x-$axis is:

A. $2\pi/3$

B. $8\pi(2\sqrt{2} - 1)/3$

C. 8π

D. $8\pi(\sqrt{2} - 1)/3$

E. $4\pi(\sqrt{2} - 1)/3$

11. Find all p such that the series $\sum_{k=1}^{\infty} \sqrt{\dfrac{k^4}{k^p + 2}}$ converges.

A. $p > 1$

B. $p > 6$

C. $p > 5$

D. $p \geq 6$

E. $p > 7$

12. $\sum_{k=0}^{\infty} \dfrac{2 + 2^k}{3^k} =$

A. ∞

B. 6

C. 3

D. 8/3

E. 14/33

MA 16200 Exam II, Oct 19, 2017

Name ____

10–digit PUID number ______________________________________

Recitation Instructor ______________________________________

Recitation Section Number and Time _____________________________

Instructions: **MARK TEST NUMBER 57 ON YOUR SCANTRON**

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$$\cos(a+b) = \cos a \cos b - \sin a \sin b \qquad 1 + \cos 2a = 2\cos^2 a$$

$$\int \sec x \, \tan x \, dx = \sec x + C \qquad \int \sec^2 x \, dx = \tan x + C$$

$$\int \frac{1}{x^2+a^2} dx = \frac{1}{a}\tan^{-1}\left(\frac{x}{a}\right) + C \qquad \int \frac{1}{\sqrt{x^2-a^2}} dx = \sin^{-1}\left(\frac{x}{a}\right) + C$$

Questions

1. Find all p such that the series $\displaystyle\sum_{k=1}^{\infty} \sqrt{\frac{k^4}{k^p + 2}}$ converges.

A. $p > 1$

B. $p > 5$

C. $p \geq 6$

D. $p > 6$

E. $p > 7$

2. $\displaystyle\sum_{k=0}^{\infty} \frac{2 + 2^k}{3^k} =$

A. ∞

B. 3

C. 8/3

D. 6

E. 14/33

3. Find the length of the curve $y = f(x)$ from $x = 0$ to $x = \pi/3$, given its derivative $f'(x) = \sqrt{\sec^2 x \tan^2 x - 1}$.

A. 2

B. $\sqrt{3}/3$

C. 4

D. $\sqrt{2}$

E. 1

4. The area of the surface obtained by revolving the curve $y = 2\sqrt{x}$ from $(0, 0)$ to $(1, 2)$ about the $x-$axis is:

A. $2\pi/3$

B. 8π

C. $8\pi(\sqrt{2} - 1)/3$

D. $8\pi(2\sqrt{2} - 1)/3$

E. $4\pi(\sqrt{2} - 1)/3$

5. Find the x-coordinate, $\bar{x}$, of the centroid for the region bounded by $y = 2x$ and $y = x^2$.

A. 2/3

B. 5/3

C. 2

D. 3/2

E. 1

6. Consider the two series

$$\sum_{n=0}^{\infty} \frac{n^2 - 1}{3n^4 + 1}, \qquad \sum_{n=0}^{\infty} \frac{1}{\sqrt{n^2 + 1}}.$$

A. Both are convergent

B. Both are divergent

C. The first one is convergent while the second one is divergent

D. The first one is divergent while the second one is convergent

E. None of the above

7. $\int_0^{\pi/2} \cos^4 x \, dx =$

A. $\pi/6$

B. $2\pi/9$

C. $3\pi/16$

D. $\pi/5$

E. $5\pi/8$

8. To compute $\displaystyle\int \frac{x^2+1}{x^2-4x+4}\, dx$, one should reduce the integrand to

A. $\frac{A}{x-2} + \frac{B}{x-2}$

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C. $\frac{A}{x-2} + \frac{B}{(x-2)^2}$

D. $1 + \frac{A}{x-2} + \frac{B}{(x-2)^2}$

E. $\frac{A}{x^2} + \frac{B}{x} + C$

9. $\displaystyle\int_0^{\pi/2} \sin^3 t \cos^4 t \, dt =$

A. 5/12

B. 1/7

C. 2/35

D. 3/28

E. 5/16

10. To compute $\displaystyle\int_0^1 \frac{x^2}{\sqrt{x^2-2x+2}}\, dx$, the first step is to reduce the integral to:

A. $\int_0^{\pi/2} \sin^2 t \tan t \, dt$

B. $\int_{-\pi/4}^{\pi/4} (1+\sin t)^2 \tan t \, dt$

C. $\int_{-\pi/4}^{0} (1+\tan t)^2 \sec t \, dt$

D. $\int_0^{\pi/4} \tan^2 t \sec t \, dt$

E. $\int_0^{\pi/2} \sin^2 t (1+\sec t) \, dt$

11. $\int_0^{3/2} \frac{1}{4y^2+9}\,dy =$

A. $\pi/6$

B. $3\pi/16$

C. $\pi/24$

D. $\pi/12$

E. $2\pi/9$

12. $\int_2^{\infty} \frac{2+u}{u^2}\,du =$

A. 1

B. 2

C. 1/2

D. The integral is divergent

E. $\ln 2$

MA 16200 Exam II, Oct 19, 2017

Name ____

10–digit PUID number ______________________________________

Recitation Instructor ______________________________________

Recitation Section Number and Time ____________________________

Instructions: **MARK TEST NUMBER 68 ON YOUR SCANTRON**

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Questions

1. $\displaystyle\int_0^{\pi/2} \sin^3 t \cos^4 t \, dt =$

A. 2/35

B. 5/12

C. 1/7

D. 3/28

E. 5/16

2. To compute $\displaystyle\int_0^1 \frac{x^2}{\sqrt{x^2-2x+2}}\, dx$, the first step is to reduce the integral to:

A. $\int_0^{\pi/2} \sin^2 t \tan t \, dt$

B. $\int_0^{\pi/2} \sin^2 t(1+\sec t)\, dt$

C. $\int_{-\pi/4}^{\pi/4} (1+\sin t)^2 \tan t \, dt$

D. $\int_{-\pi/4}^{0} (1+\tan t)^2 \sec t \, dt$

E. $\int_0^{\pi/4} \tan^2 t \sec t \, dt$

3. Find all p such that the series $\sum_{k=1}^{\infty} \sqrt{\frac{k^4}{k^p + 2}}$ converges.

A. $p > 1$

B. $p > 6$

C. $p > 5$

D. $p \geq 6$

E. $p > 7$

4. $\sum_{k=0}^{\infty} \frac{2 + 2^k}{3^k} =$

A. ∞

B. 6

C. 3

D. 8/3

E. 14/33

5. $\displaystyle\int_0^{3/2} \frac{1}{4y^2+9}\,dy =$

A. $\pi/6$

B. $3\pi/16$

C. $2\pi/9$

D. $\pi/24$

E. $\pi/12$

6. $\displaystyle\int_2^{\infty} \frac{2+u}{u^2}\,du =$

A. 1

B. 2

C. 1/2

D. $\ln 2$

E. The integral is divergent

7. $\int_0^{\pi/2} \cos^4 x\, dx =$

A. $\pi/6$

B. $3\pi/16$

C. $2\pi/9$

D. $\pi/5$

E. $5\pi/8$

8. To compute $\displaystyle\int \frac{x^2+1}{x^2-4x+4}\, dx$, one should reduce the integrand to

A. $\frac{A}{x^2} + \frac{B}{x} + C$

B. $\frac{A}{x-2} + \frac{B}{x-2}$

C. $x + \frac{A}{x-2} + \frac{B}{(x-2)^2}$

D. $\frac{A}{x-2} + \frac{B}{(x-2)^2}$

E. $1 + \frac{A}{x-2} + \frac{B}{(x-2)^2}$

9. Find the x-coordinate, $\bar{x}$, of the centroid for the region bounded by $y = 2x$ and $y = x^2$.

A. 1

B. 2/3

C. 5/3

D. 2

E. 3/2

10. Consider the two series

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D. The first one is divergent while the second one is convergent

E. None of the above

11. Find the length of the curve $y = f(x)$ from $x = 0$ to $x = \pi/3$, given its derivative $f'(x) = \sqrt{\sec^2 x \tan^2 x - 1}$.

A. 2

B. $\sqrt{3}/3$

C. 1

D. 4

E. $\sqrt{2}$

12. The area of the surface obtained by revolving the curve $y = 2\sqrt{x}$ from $(0, 0)$ to $(1, 2)$ about the $x-$axis is:

A. $2\pi/3$

B. $8\pi(2\sqrt{2} - 1)/3$

C. 8π

D. $8\pi(\sqrt{2} - 1)/3$

E. $4\pi(\sqrt{2} - 1)/3$

MA 16200 – Fall 2017

Exam 2

GREEN Test – Version 13

1	C
2	D
3	E
4	C
5	E
6	D
7	C
8	D
9	C
10	C
11	D
12	D

MA 16200 – Fall 2017

Exam 1

GREEN Test – Version 24

1	B
2	E
3	A
4	D
5	D
6	E
7	A
8	C
9	C
10	B
11	B
12	B

MA 16200 – Fall 2017

Exam 2

GREEN Test – Version 57

1	D
2	D
3	E
4	D
5	E
6	C
7	C
8	D
9	C
10	C
11	C
12	D

MA 16200 – Fall 2017

Exam 2

GREEN Test – Version 68

1	A
2	D
3	B
4	B
5	D
6	E
7	B
8	E
9	A
10	C
11	C
12	B