Review Test Submission: Graded Exam - Unit 7

[redacted]	[redacted]
Course	MAT251: General Calculus II
Test	Graded Exam - Unit 7
[redacted]	[redacted]
[redacted]	[redacted]
Status	Completed
Score	112.5 out of 150 points
Time Elapsed	26 minutes out of 1 hour.
Instructions	

Question 1

7.5 out of 7.5 points

Consider the sequence

$$a_n = \frac{n}{n^2+1}$$

Which of the following are true for this sequence?
$\{a_n\}$ is convergent.

Selected Answer: [redacted]

Question 2

7.5 out of 7.5 points

$\frac{3}{5} - \frac{3}{6} + \frac{3}{7} - \frac{3}{8} + \ldots$ is convergent.

Selected Answer: [redacted]

Question 3

7.5 out of 7.5 points

Given that $a_n > 0$ and $b_n > 0$ for all n, and that $\lim_{n\to\infty} \frac{a_n}{b_n} = L$, where $L \neq 0$ and $L \neq \infty$.

Decide whether each of the following are possible according to the Limit Comparison Test.

$\sum_{n=1}^{\infty} a_n$ converges and $\sum_{n=1}^{\infty} b_n$ diverges.

Selected Answer: [redacted]

Question 4

7.5 out of 7.5 points

A series of the form $a + ar + ar^2 + \ldots + ar^{n-1} + \ldots$ is called a _____ series.

Selected Answer: [redacted]

OK

[redacted]

Question 5 **7.5 out of 7.5 points**

Given that $a_n > 0$ and $b_n > 0$ for all n, and that $\lim_{n\to\infty}\frac{a_n}{b_n} = L$, where $L \neq 0$ and $L \neq \infty$.

Decide whether each of the following are possible according to the Limit Comparison Test.

Both $\sum_{n=1}^{\infty} a_n$ and $\sum_{n=1}^{\infty} b_n$ converge.

Selected Answer: [redacted]

Question 6 **0 out of 7.5 points**

Find the Maclaurin series for $f(x) = \frac{x}{1+\frac{x}{2}}$.

Selected Answer: [redacted]

Question 7 **7.5 out of 7.5 points**

If $|r| < 1$, the series $a + ar + ar^2 + \ldots + ar^{n-1} + \ldots$ converges to

Selected Answer: [redacted]

Question 8 **7.5 out of 7.5 points**

The Taylor polynomial of degree n approximating $f(x)$ near $x = a$ is given by:

Selected Answer: [redacted]

Question 9 **7.5 out of 7.5 points**

If $\sum_{n=1}^{\infty} |a_n|$ is convergent, then is $\sum_{n=1}^{\infty} a_n$ also convergent.

Selected Answer: [redacted]

Question 10 **0 out of 7.5 points**

A series whose even-numbrered terms are positive and odd-numbered terms are negative, or vice versa, is called an _____ series.

Selected Answer: [redacted]

Question 11 **7.5 out of 7.5 points**

Find the sum of the series $-\frac{4}{3} + \frac{4}{3^2} - \frac{4}{3^3} + \frac{4}{3^4} - \ldots$ if it exists. Write "diverges" otherwise.

Selected Answer: [redacted]

Question 12 **0 out of 7.5 points**

Consider the sequence

$$a_n = \frac{3^n}{n!}$$

Which of the following are true about $\{a_n\}$?
$\{a_n\}$ is monotonic.

Selected Answer: [redacted]

Question 13 **7.5 out of 7.5 points**

A sequence $\{a_n\}$ converges if

Selected Answer: [redacted]

Question 14 **7.5 out of 7.5 points**

Given that $0 < a_n \leq b_n$ for all n, decide whether each of the following statements is true according to the Direct Comparison Test.

If $\sum_{n=1}^{\infty} b_n$ diverges, then $\sum_{n=1}^{\infty} a_n$ diverges.

Selected Answer: [redacted]

Question 15 **0 out of 7.5 points**

Find the 50^{th} term of the following sequence. Round your answer to the nearest .001 .

$$-\frac{1}{4}, \frac{2}{9}, -\frac{3}{16}, \frac{4}{25}$$

Selected Answer: [redacted]

Question 16 **7.5 out of 7.5 points**

If a series $\sum_{n=0}^{\infty} a_n(x-c)^n$ converges when x is in the interval $[-4, 2]$, what is the radius of convergence?

Selected Answer: [redacted]

Question 17 **7.5 out of 7.5 points**

A series of the form $\sum_{n=0}^{\infty} a_n(x-c)^n$ is called a _____ series.

Selected Answer: [redacted]

Question 18 **0 out of 7.5 points**

For which of the following series is the Ratio Test inconclusive (that is, it fails to give a definite answer)?

I. $\sum_{n=1}^{\infty} \frac{(-1)^n \sqrt{n+1}}{1+n^3}$

II. $\sum_{n=1}^{\infty} \frac{1}{n^4}$

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

Selected Answer: [redacted]

Question 19

7.5 out of 7.5 points

Consider the sequence

$$\{\ln(n+1) - \ln(n)\}$$

Does the sequence converge or diverge?
If it converges, give its limit. Otherwise write "diverges".

Selected Answer: [redacted]

Question 20

7.5 out of 7.5 points

Given that $0 < a_n \leq b_n$ for all n, decide whether each of the following statements is true according to the Direct Comparison Test.

If $\sum_{n=1}^{\infty} b_n$ converges, then $\sum_{n=1}^{\infty} a_n$ converges.

Selected Answer: [redacted]

Monday, February 13, 2012 12:25:16 AM EST