

MATH 1452-012: EXAM 3 INFO/LOGISTICS/ADVICE

• **INFO:**

WHEN:	Wednesday (04/16) at 2:00pm	DURATION:	110 minutes
PROBLEM COUNT:	Appropriate for a 110-minute exam	BONUS COUNT:	Several

- TOPICS COVERED: (“SST” = “Strauss, Smith & Toda” (i.e. the textbook))
- * SST 8.1: Sequences: Limits, Boundedness, Monotonicity, BMCT
 - * SST 8.2: Geometric Series, Telescoping Series
 - * SST 8.3: Positive Series → Divergence Test, Integral Test, p -Series Test
 - * SST 8.4: Positive Series → Direct Comparison & Limit Comparison Tests
 - * SST 8.5: Positive Series → Ratio Test, Root Test
 - * SST 8.6: Alternating Series Test, Absolute Convergence, Conditional Convergence
 - * SST 8.7: Power Series
 - * SST 8.8: Taylor Series
 - * REMARK: **No series tests will be provided**, so memorize them.
 - * REMARK: **No special series (except Binomial series) will be provided**, so memorize or derive them.
 - * REMARK: **No basic integral formulas will be provided**, so either memorize or derive them.
 - * REMARK: **No trig identities will be provided**, so either memorize them or learn how to derive them.
 - * **You are allowed to use the following limits without formal work:**

$$\lim_{k \rightarrow \infty} \sqrt[k]{2} = 1, \quad \lim_{k \rightarrow \infty} \sqrt[k]{3} = 1, \quad \lim_{k \rightarrow \infty} \sqrt[k]{4} = 1, \quad \dots, \quad \lim_{k \rightarrow \infty} \sqrt[k]{k} = 1, \quad \lim_{k \rightarrow \infty} \left(1 + \frac{1}{k}\right)^k = e$$

- * **You are allowed to appeal to the “Tower of Power” when computing limits:**

Eventually (i.e. as $x, k \rightarrow \infty$):

$$\dots \leq \ln(\ln x) \leq \log_{10} x \leq \ln x \leq \log_2 x \leq \sqrt[10]{x} \leq \sqrt[3]{x} \leq \sqrt{x} \leq x \leq x^2 \leq x^{10} \leq 2^x \leq e^x \leq 10^x \leq k! \leq x^x \leq \dots$$

Nested Log’s ≤ Log’s ≤ Roots ≤ Powers ≤ Exp’s ≤ Factorials ≤ Nested Exp’s

- * **Specify which Series Test you’re using along with appropriate work!!**
- * **Merely stating a series “Converges” or “Diverges” earns NO CREDIT!!**

– TOPICS CANDIDATE FOR BONUS QUESTIONS:

- * SST 8.8 : Binomial Series
- * ??????

– TOPICS NOT COVERED AT ALL:

- * Sketching or Graphing of any sort
- * Any Proofs discussed in the textbook or during lecture
- * SST 8.2: Applications of Geometric Series
- * SST 8.6: Error Estimates for Alternating Series
- * SST 8.8: Error Estimates for Taylor Series (Taylor’s Remainder Theorem)
- * SST 8.8: Taylor Series of a **Nonelementary Function**
- * SST 8.8: Multiplication of two Series

• **LOGISTICS:**

- **All you need to bring are pencil(s), eraser(s) & your Raidercard.**
- Clear your desk of everything except pencil(s) and eraser(s).
- Books, notes, notecards, calculators NOT PERMITTED.
- Mobile devices (phones, tablets, PC’s, music, ...) are to be shut off and put away.
- Tissues will be furnished – for allergies, not for sobbing.
- No talking or cheating!
- **If you ask to use the restroom during the exam, either hold it or turn in your exam for grading.**

- **ADVICE:**

- **Work some problems involving testing series in the book – doing so will give you more experience.**
- **Use the restroom before the exam, if needed.**
- Review past homework, and perhaps even work some similar problems in the textbook.
- Review relevant examples in the textbook & the PDF slides.
- Use flashcards to aid in memorization of hard formulas.
- Study for the exam together in groups.
- Show up to the last-minute help session on Tuesday (04/15).
- **SHOW APPROPRIATE WORK!** Attempt bonus questions.