

# 11<sup>th</sup> Annual UMS Integration Bee

## 2023 Integration Bee Rules

### Preliminary Round

The qualifying exam will be held in NPB 1001 and begin promptly at 10:00 AM. No resources of any kind are to be used during the exam, including but not limited to formula sheets and calculators. The exam paper will consist of a numbered list of problems. Participants will submit only this paper; participants should write only their name and their final answers on this sheet, with answers boxed or circled and written next to the corresponding problem. Scratch work need not be turned in, but must be discarded following the exam. The exam period will end strictly at 11:30 AM.

The vast majority of problems will require only knowledge up until Calculus 2, although experience in other classes and subjects may allow for quicker solves for select problems. There will be no double or triple integrals, and the vast majority of integrals will require only standard Riemann integration. All problems will be weighted equally, so complete easy problems first. However, questions will be categorized by difficulty (easy, medium, hard) and ties will be broken via the number of hard problems answered correctly, then medium problems, then by the first incorrect answer method.

Participants scoring in the top sixteen will advance to the playoffs. Seeding will be based on the standard system, by score in the preliminary round (i.e. participants seeding 1 and 16, 2 and 15, etc. will compete against each other in Winners' Round 1). Any cheating will result in immediate disqualification.

### Playoffs

Playoffs will begin at 1:00 PM (subject to change slightly in the event of very high turnout). All students are welcome and encouraged to attend these playoffs, though only the sixteen qualifying students may participate. A bracket is included at the end of this file. Multiple separate rooms will be used to conduct competitions in parallel as outlined in the schedule on the next page. Spectators are free to attend whichever matches they wish, though moving between rooms during play is strongly discouraged out of respect for the participants.

**General Rules:** Both participants may agree to pass on a problem, and the next one will be given. Problems are timed, with a maximum limit of 5 minutes. The moderator will assess progress at (and announce) the 3-minute and 5-minute marks. When a participant signals that they have an answer, by boxing their answer on the chalkboard, the other participant is allowed and encouraged to continue working. If the participant gives a correct answer, the time will end and the next problem will be given. If a participant gives an incorrect answer the other participant will remain eligible to give an answer for the remaining time. No participant can attempt to answer a problem again after giving an incorrect answer to that problem. Moderators will be present to check participants' answers.

**Winners Round 1, Losers Round 1, Winners Round 2, Losers Round 2, Losers Round 3:** The first participant to give two correct answers will be declared the winner. If a participant leads 1-0 after four problems, that participant will be declared the winner. If after four problems the score is tied, the first participant who gives a correct answer will be declared the winner.

**Winners Round 3, Losers Round 4, Winners Final, Losers Round 5, Losers Final:** The first participant to give three correct answers will be declared the winner.

**Grand Final:** The final will use a "bracket reset" format with a potential two games; the first participant to give three correct answers in a game will be declared the winner of that game. The participant coming from the losers bracket must win two games to become the champion, while the participant coming from the winners bracket must win one game to become the champion. The champion will be awarded the title "Grand Integrator 2023."

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## SCHEDULE:

Room	Room A	Room B	Room C	Room D	Room E	Room F	Room G	Room H
	NPB 1001	NPB 1002	NPB 1011	NPB 1101	NPB 1200	NPB 1216	NPB 1220	NPB 2165
Officer	Jude	Silas	Townsend	Sai	Michael	Connor	Maia	Max
10:00 AM	Qualifier	-	-	-	-	-	-	-
11:30 AM	Lunch + Scoring							
12:30 PM	WR1 (2)	WR1 (2)	WR1 (2)	WR1 (2)	WR1 (2)	WR1 (2)	WR1 (2)	WR1 (2)
12:50 PM	WR2 (2)	WR2 (2)	WR2 (2)	WR2 (2)	LR1 (2)	LR1 (2)	LR1 (2)	LR1 (2)
1:10 PM	LR2 (2)	LR2 (2)	LR2 (2)	LR2 (2)	-	-	-	-
1:30 PM	WR3 (3)	WR3 (3)	LR3 (2)	LR3 (2)	-	-	-	-
2:00 PM	LR4 (3)	LR4 (3)	-	-	-	-	-	-
2:30 PM	WF (3)	LR5 (3)	-	-	-	-	-	-
3:00 PM	LF (3)	-	-	-	-	-	-	-
3:30 PM	GF (3) (3)	-	-	-	-	-	-	-

