

MATH 301 — Introduction to Linear Algebra

BSU Spring 2026 | Section 001 | Tim Palacios (timpalacios)

This repository contains course materials, Python calculation notebooks, and midterm study notes for MATH 301 at Boise State University. Source materials are the weekly quiz and WebWork PDFs from Weeks 1–7, plus Jupyter notebooks used for in-class and homework calculations.

Exam Dates

Exam	Date	Time
Midterm Written	Tuesday, March 3, 2026	12:00–1:15 pm
Midterm WeBWork	Thursday, March 5, 2026	12:00–1:15 pm
Final Exam (both portions)	Tuesday, May 5, 2026	12:00–2:00 pm

Allowed on both midterm portions: One 8.5"×11" sheet of notes (two-sided) + scratch paper. **WeBWork portion also allows:** Python for calculations. **Not allowed:** Calculators, any electronic devices (other than exam computer for WeBWork).

Repository Contents

Course Materials (pdfs/)

File	Description
Class Notes v2.pdf	

File	Description
	Full class notes from the professor
Week 01 Quiz.pdf	Linear equations, solution counts
Week 01 WebWork.pdf	Solving systems, verifying solutions
Week 02 Quiz.pdf	Augmented matrices, EROs, RREF
Week 02 WebWork.pdf	Row reduction, Gauss-Jordan elimination
Week 03 Quiz.pdf	Vectors, linear combinations, subspaces
Week 03 WebWork.pdf	Vector arithmetic, subspace tests
Week 04 Quiz.pdf	Independence, span, basis
Week 04 WebWork.pdf	Pivot method, representations w.r.t. basis
Week 05 Quiz.pdf	Fundamental subspaces, rank-nullity
Week 05 WebWork.pdf	col(A), row(A), null(A) computations
Week 06 Quiz.pdf	Linear transformations
Week 07 Quiz.pdf	ERO matrices, invertibility
Exam info from Professor.pdf	Official exam rules, dates, Respondus browser info

Python Notebooks (python-material/)

Jupyter notebooks used for calculations throughout the course. The WeBWorK midterm allows Python.

File	Description
01 - Using Python in Linear Algebra.ipynb	NumPy vs SymPy intro; exact fractions with S()
04 - Using Python to find RREF.ipynb	rref()[0], decimal rounding bug, Rational fix, evalf()
Solving Linear Systems.ipynb	linsolve() — augmented matrix and equation styles
Conceptual Quiz.ipynb	RREF applied to null space / conceptual problems

File	Description
Week 1 WebWork - Problem 9.ipynb	Week 1 homework calculation
Week 2 Group Work.ipynb	<code>linsolve()</code> examples from group activity
Week 2 WebWork.ipynb	Week 2 homework solved with <code>linsolve()</code>
Week 3 WebWork.ipynb	Week 3 homework solved with <code>linsolve()</code>
Week 4 WebWork.ipynb	Decimal matrix RREF with Rational fix
Week 5 Webwork.ipynb	Fundamental subspaces via <code>rref()</code>

See [pdfs/08-python-linear-algebra.pdf](#) for a full study guide covering all notebook material.

Study Notes (pdfs/)

Generated from the course materials above. All study note PDFs are in the pdfs/ folder.

File	Topic	Week
00-cheat-sheet.pdf	Print-ready exam sheet (9pt, front+back)	All
01-linear-systems.pdf	Linear equations; solution count rules	1
02-row-operations.pdf	Augmented matrices; valid EROs; RREF	2
03-vectors-subspaces.pdf	Vectors; linear combos; 3-condition subspace test	3
04-independence-span-basis.pdf	Independence; span; basis; pivot method	4
05-fundamental-subspaces.pdf	<code>col(A)</code> , <code>row(A)</code> , <code>null(A)</code> ; rank-nullity	5 *
06-linear-transformations.pdf	$T: \mathbb{R}^n$ to \mathbb{R}^m ; linearity; kernel; image	6 *

File	Topic	Week
07-invertibility-ero-matrices.pdf	ERO matrices; invertible transformations	7 *
08-python-linear-algebra.pdf	SymPy/NumPy tools for WeBWorK exam	All

• = highest priority for midterm (Weeks 5–7 are hardest)

Recommended Study Order

1. 05-fundamental-subspaces.pdf — rank-nullity trap tested on every quiz
2. 06-linear-transformations.pdf — computing T of a linear combo is the key skill
3. 07-invertibility-ero-matrices.pdf — ERO matrix entry placement; invertibility logic
4. 04-independence-span-basis.pdf — foundation for everything in weeks 5–7
5. 03-vectors-subspaces.pdf — subspace 3-condition test
6. 01-linear-systems.pdf + 02-row-operations.pdf — earlier material, quick review
7. 08-python-linear-algebra.pdf — review before the WeBWorK exam (Thursday 3/5)
8. 00-cheat-sheet.pdf — read the night before; **print and bring to the exam**

Printing the Cheat Sheet

pdfs/00-cheat-sheet.pdf is designed to fit on **one sheet of paper** (front and back):

- Font: **9pt**
- Margins: **0.5 inches** all sides
- Layout: double-sided
- Print directly from the PDF

This sheet is allowed on both the Written and WeBWorK portions of the midterm.