

# Math 0280 Schedule and Practice Problems

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**January 10:**

Introduction.

1.1. The Geometry and Algebra of Vectors.

1.1 Problems 1--28

**January 12:**

1.1.(cont.) The Geometry and Algebra of Vectors

1.1 Problems 1--28

**January 14:**

1.2. Length and Angle. The Dot Product. Projections.

1.2 Problems 1--52.

**January 19:**

1.2.(cont.) Length and Angle. The Dot Product. Projections.

1.3. Lines and Planes.

1.2 Problems 61--67.

1.3 Problems 1--15.

**January 21:**

1.3. Lines and Planes.

1.3 Problems 18--30, 35--38.

**January 24:**

2.1. Introduction to Systems of Linear Equations.

2.1 Problems 1--38.

**January 26:**

2.2. Direct Methods for Solving Linear Systems.

2.2 Problems 1--18.

**January 28:**

2.2.(cont.) Direct Methods for Solving Linear Systems.

2.2 Problems 23--46.

**January 31:**

2.3. Spanning Sets and Linear Independence.

2.3 Problems 1--42.

**February 2:**

2.3.(cont.) Spanning Sets and Linear Independence.

2.3 Problems 1--42.

**February 4:**

2.3.(cont.) Spanning Sets and Linear Independence.

2.3 Problems 1--42.

**February 7:**

Chapters 1 and 2 Review. Applications.

**February 9:**

3.1. Matrix Operations.

3.1 Problems 1--22, 31--36

**February 11:**

3.2. Matrix Algebra.

3.2 Problems 1--28.

**February 14:**

3.3. The Inverse of a Matrix. Elementary Matrices. The Fundamental Theorem of Invertible Matrices.

3.3 Problems 1--23.

**February 16:**

3.3. (cont.) The Inverse of a Matrix. Elementary Matrices. The Fundamental Theorem of Invertible Matrices.

3.3 Problems 24--40.

**February 18:**

3.3.(cont.) The Inverse of a Matrix. Elementary Matrices. The Fundamental Theorem of Invertible Matrices.

3.3 Problems 48--59.

**February 21:**

Review.

**February 23:**  
Midterm Exam 1

**February 25:**  
3.5. Subspaces, Basis, Dimension, Rank. Coordinates.  
3.5 Problems 1--48, 51, 52.

**February 28:**  
3.5.(cont.) Subspaces, Basis, Dimension, Rank. Coordinates.  
3.5 Problems 1--48, 51, 52.

**March 2:**  
3.5.(cont.) Subspaces, Basis, Dimension, Rank. Coordinates.  
3.5 Problems 1--48, 51, 52.

**March 4:**  
3.6. Introduction to Linear Transformations.  
3.6 Problems 1--25, 29--39.

**March 14:**  
3.6.(cont.) Introduction to Linear Transformations.  
3.6 Problems 1--25, 29--39.

**March 16:**  
Chapter 3 Review. Applications.

**March 18:**  
4.1. Introduction to Eigenvalues and Eigenvectors.  
4.1 Problems 1--18.

**March 21:**  
4.2. Determinants. The Laplace Expansion Theorem.  
4.2 Problems 1--52.

**March 23:**  
4.2.(cont.) Determinants. Cramer's Rule. Adjoint.  
4.2 Problems 57--65.

**March 25:**  
4.3. Eigenvalues and Eigenvectors of  $n \times n$  Matrices  
4.3 Problems 1--18.

**March 28:**  
4.3. (cont.) Eigenvalues and Eigenvectors of  $n \times n$  Matrices  
4.3 Problems 1--18.

**March 30:**  
Review

**April 1:**  
Midterm Exam 2

**April 4:**  
4.4. Similarity and Diagonalization.  
4.4 Problems 1--41.

**April 6:**  
4.4.(cont.) Similarity and Diagonalization.  
4.4 Problems 1--41.

**April 8:**  
5.1. Orthogonality. Orthogonal Matrices.  
5.1 Problems 1--21.

**April 11:**  
5.2. Orthogonal Complements and Orthogonal Projections. The Orthogonal Decomposition.  
5.2 Problems 1--22.

**April 13:**  
5.2. (cont.) Orthogonal Complements and Orthogonal Projections. The Orthogonal Decomposition.  
5.2 Problems 1--22.

**April 15:**  
5.3. The Gram-Schmidt Process.  
5.3 Problems 1--14.

**April 18:**

5.4. Orthogonal Diagonalization of Symmetric Matrices.

5.4 Problems 1--12.

**April 20:**

5.4. (cont.) Orthogonal Diagonalization of Symmetric Matrices.

5.4 Problems 1--12.

**April 22:**

Chapters 4 and 5 Review. Applications.

**TBA:**

Final exam for all day sections