

# Math 129-003

## Final Exam Information

The comprehensive final exam is worth 100 points and is scheduled for Thursday, December 12, 8:00am–9:15am. The content of the exam will be split up roughly as follows:

- about 20% from Test 1 material,
- about 20% from Test 2 material,
- about 20% from Test 3 material, and
- about 40% from recent material.

To prepare for the final exam, you should study the material from your class notes, review packets, and old tests. Focus your efforts on the following daily objectives (which relate very closely to course outcomes). The numbers in brackets are the corresponding course objectives from the syllabus.

### Test 1 objectives

1. Solve linear inequalities. [3]
2. Solve absolute value equations. [11]
3. Solve absolute value inequalities. [11]
4. Solve quadratic equations by factoring. [7]
5. Solve quadratic equations by using the quadratic formula. [7]
6. Solve rational equations that reduce to linear or quadratic. [3,7,11]

### Test 2 objectives

1. Solve radical equations. [11]
2. Solve equations that are quadratic in form. [7,11]
3. Graph a line by finding two points on the line. [3]
4. Find the  $x$ - and  $y$ -intercepts of a line. [3]
5. Determine lines parallel or perpendicular to given lines. [2,4]
6. Find and apply the slope-intercept form of the equation of a line. [2,4]
7. Find and apply the point-slope form of the equation of a line. [2,4]
8. Graph a line using its slope and a point. [2,4]
9. Find lines parallel or perpendicular to given lines. [2,4]
10. Apply lines and linear equations in real-world applications. [2,3,4]

11. Determine whether a relation is a function. [10]
12. Determine the domain and range of a function. [1]

### Test 3 objectives

1. Evaluate difference quotients. [5]
2. Develop a familiarity with the graphs of basic functions (Toolbox Functions). [8,10]
3. Apply the transformations (shifts, reflections, stretches, and compressions) to basic graphs to obtain more general graphs. [9]
4. Define and evaluate piecewise functions. [1,5]
5. Sketch the graph of a piecewise-defined function. [1,5]
6. Compute a composition of functions. [5]
7. Write a function as a composition of functions. [5]

### Recent objectives

1. Find the vertex, intercepts, and symmetry axis of a parabola. [8]
2. Write a quadratic function in vertex form. [6,8]
3. Solve application problems involving quadratic functions and parabolas. [8]
4. Find the zeros of a polynomial and determine their multiplicities. [12]
5. Carry out polynomial long division and synthetic division. [12]
6. Apply the remainder and factor theorems. [12]
7. Factor a polynomial with real coefficients into a product of linear factors and irreducible quadratic factors. [12]
8. Determine the end behavior of a polynomial function. [12,13]
9. Use multiplicities of zeros and end behavior to graph a polynomial function. [12,13]
10. Determine the vertical, horizontal, and/or slant asymptotes of the graph of a rational function. [13]
11. Sketch the graph of a rational function. [13]
12. Solve polynomial inequalities. [11,12]
13. Solve rational inequalities. [11,12,13]