

# Integrated Math 3

## Course Preparedness Profile & Expectations

Students should have a “C” or higher in Integrated Math 2 or Integrated Math 2 Honors.

Difficulty Level: Difficult

Estimated Homework: 30 – 60 minutes

Prerequisites: C in IM2

Meets High School graduation requirement for mathematics

Meets UC/CSU subject area “c” requirement

Below are some guidelines for choosing the best course for an individual student. This is *not* a placement test and it should *not* be used as the only criteria for making placement decisions.

### Student Background

Students entering **Integrated Math 3** should *already* have a good understanding of the following concepts:

- Understanding properties of linear, exponential and quadratic functions.
- Graphing and describing features of linear, exponential and quadratic functions.
- Defining, evaluating, and comparing functions, and use them to model relationships among quantities.
- Knowing and proving properties of lines, triangles, quadrilaterals and circles.
- Solving real-world and mathematical problems using linear, exponential, and quadratic mathematical models.
- Understanding and applying right triangle trigonometry and the special right triangles.
- Understanding and calculating probability for independent and dependent events.

Students entering **Integrated Math 3** should also be able to solve problems such as

<p><u>Probability Problem:</u></p> <p>A certain test for an antibody is applied to a blood sample. The test gives a positive result 5% of the time for people who do not have the antibody. The test gives a negative result 0.3% of the time for people who do have the antibody. It is known that the antibody appears in 2% of the population. What is the probability that a person selected at random would test positive for the antibody?</p>	<p><u>Equation Problem:</u></p> <p>Solve the equations to determine whether <math>x</math> or <math>y</math> is larger:</p> $2(x - 7)^5 + 9 = 73$ $5 - (y + 1)^2 = -103$
<p><u>Word Problem:</u></p> <p>A student stands across the street from a building and measures her angle of elevation at this point to the top of the building to be 8 degrees. She then walks forward 3 meters and measures the angle of elevation now to be 12 degrees. How tall is the building?</p>	<p><u>Function Problem:</u></p> <p>Graph the quadratic function <math>g(x) = 3x^2 - 21x + 8</math>. Rewrite <math>g(x)</math> in factored form and in vertex form. Explain the benefits of both forms and how each form is represented in the graph.</p>

Coordinate Geometry Problem:

A circle has equation of  $x^2 - 4x + y^2 + 2y = 30$   
Write the equation of the circle with the same center  
and a radius twice as long.

Geometry Problem:

Suppose quadrilateral ABCD is a cyclic quadrilateral.  
Let angle A has a measure of  $x$  degrees. Angle C  
measures ten less than twice the measure of angle A.  
The measure of Angle D is a third of the measure of  
Angle C. How large is the measure of angle B?

## Course Content and Expectations

In **Integrated Math 3**, students will learn concepts such as:

- Manipulating polynomial and rational expressions.
- Graphing polynomial and rational functions and identifying key features of the graphs (turn-around points, end behavior, asymptotic behavior, etc.)
- Understanding the concept of inverse functions, domain, and range, and identify properties of functions and graphs.
- Interpreting and composing functions given graphically, numerically, symbolically, and verbally representations.
- Modeling with functions using tables, functions, and understanding when the context allows for a model that is only an approximation.
- Creating and modeling real-life scenarios with rational functions, logarithmic functions, and trigonometric functions.
- Discovering and proving properties of logarithmic functions.
- Extending right-triangle trigonometry to the unit circle.
- Graphing trigonometric functions and identifying key features.
- Proving and applying the Law of Sines and Law of Cosines.
- Using statistics and the standard normal curve to make inferences on a population.

As in all math courses offered at SDUHSD, students are aware of and make use of all **Standards for Mathematical Practices**:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Students will be expected to work collaboratively as well as individually. On a regular basis, classes will include:

- Group problem solving followed by group and/or individual presentations.
- Open ended problems that are applications of the content being covered.