



U. S. Merchant Marine Academy

U.S. Department of Transportation
Maritime Administration

Kings Point, NY 11024-1699
Department of Math & Science

Congratulations on your acceptance to the United States Merchant Marine Academy!

The Academy's course of study is rigorous and demanding. Every midshipman takes at least three mathematics and three science subjects, including two terms of Calculus. To succeed at Kings Point, it is essential that you come to the Academy with grounding in algebra and trigonometry, and hopefully pre-calculus.

During the Indoctrination period, you will take the Mathematics Evaluation Test.

The test concentrates on topics from algebra, trigonometry, and pre-calculus. Specific areas covered include basic algebra; linear and quadratic equations; systems of equations and inequalities; properties of functions and modeling; linear, polynomial, and rational functions; exponential functions and logarithms; basic trigonometry, including right triangle trigonometry, and trigonometric functions.

Based on the results of this test you will be assigned to one of the two math courses for your first term:

- 1) **Calculus 1 with Pre-calculus review (4 credits).** This course spends the first three weeks on pre-calculus mathematics and then covers the basic material of a typical first-term calculus course. The course meets 4 times per week. You will be placed in this course based on the results of the Indoc math exam.
- 2) **Calculus 1 (3 credits).** This calculus course assumes a strong background knowledge of pre-calculus content such as algebra, trigonometry and functions. It is geared to students who enter the Academy with a stronger mathematical background. The course meets 3 times per week. You will be placed in this course based on the results of the Indoc math exam.

Either course will give you the foundation to continue with the second term calculus courses.

To prepare for your evaluation test and future math and science courses, the Department of Mathematics and Science strongly suggests that you review core mathematical skills. There are many resources available on- and off- line. Below are our recommendations:

- 1) Base your review on Precalculus by Jay Abramson (Arizona State University), available at <https://openstax.org/details/books/prec calculus> (download the PDF for quicker access)

Try to solve the following problems

- pp. 153–159, problems 1–79 (odd)
- pp. 240–244, problems 1–33 (odd)
- pp. 404–405, problems 13–23 (odd), 37–39 (odd)

pp.539–541, problems 1–45(odd)
pp.626–629, problems 1–49 (odd)
pp.689–691, problems 7–33 (odd)

Memorize all graphs in appendix A, pages A-1, A-2 (pp. 1283, 1284 in PDF).

Check your answers in the back of the textbook (in Appendix C). If you get more than a few problems wrong in each chapter, please read over the sections that explain the types of problems you did not solve. You will find worked out examples with similar problems.

Ideally, and if you have enough time, the best thing you can do is to read first Chapters 1, 2, 3 (sections 3.1–3.4 only), 4, 5, 9 (section 9.1–9.3 only). Pay special attention to the worked-out example problems!

2) Additionally, you may use the following resources:

Khan Academy (tutorials for algebra, trigonometry, and pre-calculus):
<https://www.khanacademy.org/>

Stewart's Calculus Algebra Review (basic algebra for textbook used at USMMA):
<https://www.stewartcalculus.com/data/default/upfiles/AlgebraReview.pdf>

Paul's Online Notes, Algebra and Trig Review (geared to calculus students):
<https://tutorial.math.lamar.edu/Extras/AlgebraTrigReview/AlgebraTrigIntro.aspx>

Purplemath (algebra reviews):
<https://www.purplemath.com/modules/index.htm>

Study well! We look forward to your arrival at the Academy,
Department of Mathematics & Science Faculty