

PRECALCULUS HOMEWORK

- This homework is based on: J. Stewart, L. Redlin, and S. Watson (2009): “Precalculus”, 5th edition, Brooks/Cole, 2009
- Homework will not be collected or graded. Nevertheless, it is crucial to do the homework as part of your preparation for the exams. To keep up, I recommend that **after every lecture you should solve the homework problems corresponding to the material covered on that day’s lecture**. Do the assigned reading and problems in the specified order.
- PRE1, PRE2, etc. refer to the problems given in the *online lecture notes*. These notes are available at the course website.
- Problems indicated “for fun” are for math majors.
- If you can’t do all the problems, do the rest of them during the break after class.

Trigonometric functions

- **Trigonometric circle**
Read §5.1, §5.2
PRE2: 1,3
§5.2: 48-52,53-56,63,64,66,67
PRE2: 2
- **Reduction to 1st quadrant**
Read §5.2
§5.2: 3-8, 11,12,15,16,21
PRE2: 4
- **Simple trigonometric identities**
Read §7.1
§7.1: 1-6, 36-42 (optional: 43-88; these are fun!)
PRE2: 5,6,7,8 (do as many as you can)
- **Graphs of sin and cos**
Read §5.3
§5.3: 23-33
PRE2: 9
- **Graphs of tan and cot**
Read §5.4
§5.4: 17,21,28,33,37,47,41
PRE2: 10

Trigonometric identities

- **$a + b$ identities**
Read §7.2
§7.2: 13-18,19-22,35-40

PRE3: 1,2,3

- **$2a/3a$ identities**

Read §7.3

PRE3: 4,5,6

§7.3: 19, 20, 25, 26, 59-70, 82

PRE3: 7,8,9,10

PRE3: 11,12 (optional)

- **Product/Sum identities**

Read §7.3

§7.3: 41-58

PRE3: 13,14,15,16,17

Trigonometric equations and inequalities

- **Inverse trigonometric functions**
Read §7.4
§7.4: 41-48 (for fun)
- **Fundamental trigonometric equations**
Read lecture notes
Read §7.5 (e.g. 1, 2, 3,8,9,11)
§7.5: 1-6,25-33
PRE4: 1
- **Trigonometric equations – 1 unknown**
Read lecture notes
Read §7.5 (e.g. 4, 10)
§7.5: 7, 13, 16, 17, 19-23,35,36

- PRE4: 2
- **Trigonometric equations – Multiple unknowns**
Read lecture notes
Read §7.5 (e.g. 5,6; ignore 7 due to bad method)
§7.5: 23, 24, 37,38,39,67,68
PRE4: 3
(sums to products or vice versa)
§7.5: 69-72
PRE4: 4
 - **Special types of trigonometric equations**
Read lecture notes
Read §7.5 (e.g. 7 is a linear trigonometric equation, DIY!)
§7.5: 52 (solve as linear trigonometric, find all solutions)
PRE4: 5
 - **Solving trigonometric equations in an interval**
Read lecture notes
PRE4: 6,7,8,9,10

Application to triangles

- **Right Triangles**
Read §6.2
§6.2: 9-14,61-65
PRE5: 1
- **General Triangles**
Read §6.4, §6.5
PRE5: 2
§6.4: 31-34
§6.5: 37, 42-44
PRE5: 3,4,5 (for fun)
- **Area of triangles**
Read §6.5
§6.5: 27-30
PRE5: 6
PRE5: 7,8 (for fun)

Vectors

- **Definitions**

- Read §8.4
PRE6: 1-4
- **Vector operations (sum and scalar product)**
Read §8.4
§8.4: 17, 23, 25, 27,28, 33, 34, 37
PRE6: 5-8
PRE6: 9,10 (for fun)
 - **Vector operations (inner product)**
Read §8.5
§8.5: 1,2,5,15-18
PRE6: 11-17
PRE6: 18-20 (for fun)

Introduction to series

- **Sequences and series**
Read §11.1, 11,2
§11.1: 39, 41,59-66
§11.2: 8, 17, 39, 40, 45-50
PRE7: 1
- **Geometric sums**
Read §11.3
§11.3: 43-52,54
PRE7: 2,3,4

Introduction to analytic geometry

- **Parabola**
Read §10.1
§10.1: 7-18, 25-36
§10.4: 5-8, 20, 22, 26
PRE8: 1,2
- **Ellipse**
Read §10.2
§10.2: 5-18, 29-40
§10.4: 1-4, 19, 23, 24, 29, 30
PRE8: 3,4
- **Hyperbola**
Read §10.3
§10.3: 5-16,27-38
§10.4: 9-12, 21, 25,28
PRE8: 5,6