

## PRECALCULUS HOMEWORK

- This homework is based on: J. Stewart, L. Redlin, and S. Watson (2011): “Precalculus”, 6th edition, Brooks/Cole
- 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  
PRE2: 2
- **Reduction to 1st quadrant**  
Read §5.2  
§5.2: 5a, 6c,7c,8b,9a,11c, 17c, 23abc, 24b  
PRE2: 4
- **Simple trigonometric identities**  
Read §7.1  
§7.1: 38, 41, 42, 45, 48-53, 55, 57, 58, 61, 76  
PRE2: 5,6,7,8 (do as many as you can)
- **Graphs of sin and cos**  
Read §5.3  
§5.3: 29-42  
PRE2: 9
- **Graphs of tan and cot**  
Read §5.4  
§5.4: 19, 20, 39, 41, 43, 44, 49, 50, 53  
PRE2: 10

### Trigonometric identities

- **$a + b$  identities**  
Read §7.2  
§7.2: 15-20, 35-42  
PRE3: 1,2,3
- **$2a/3a$  identities**  
Read §7.3  
PRE3: 4,5,6  
§7.3: 73-77, 79-83  
PRE3: 7,8,9,10

PRE3: 11,12 (optional)

- **Product/Sum identities**  
Read §7.3  
§7.3: 55-66, 85-88  
PRE3: 13,14,15,16,17

### Trigonometric equations and inequalities

- **Inverse trigonometric functions**  
Read §5.5  
§5.5: 3-10 (for fun)
- **Fundamental trigonometric equations**  
Read lecture notes  
Read §7.4 (e.g. 1,2,3,5), §7.5 (e.g. 5,6)  
§7.4: 25-33  
PRE4: 1
- **Trigonometric equations – 1 unknown**  
Read lecture notes  
Read §7.4 (e.g. 6, 7),  
§7.4: 39-44, 50, 53-56  
PRE4: 2
- **Trigonometric equations – Multiple unknowns**  
Read lecture notes  
Read §7.5 (e.g. 1, 2; ignore 3 due to horrible method)  
§7.5: 3, 4, 7-14, 32, 33,  
PRE4: 3  
(sums to products or vice versa)  
§7.5: 39-51  
PRE4: 4

- **Special types of trigonometric equations**

Read lecture notes

Read §7.5 (e.g. 3 is a linear trigonometric equation, DIY!)

§7.5: 27, 51, 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

- **Trigonometric Inequalities**

Read Lecture notes

PRE4: 11, 12

### Application to triangles

- **Right Triangles**

Read §6.2

§6.2: 31, 32, 35-38

PRE5: 1

- **General Triangles**

Read §6.5

PRE5: 2

PRE5: 3,4,5

- **Area of triangles**

Read §6.5

§6.5: 29-32

PRE5: 6

PRE5: 7,8 (for fun)

### Vectors

- **Definitions**

Read §9.1

PRE6: 1-4

- **Vector operations**

Read §9.1

§9.1: 37-40

PRE6: 5-10

- **Inner product**

Read §9.2

§9.2: 5-14 (find the cosine of the angle), 39-42

PRE6: 11-20

### Introduction to series

- **Sequences and series**

Read Lecture Notes

Read §12.1, 12,2

§12.1: 49, 50, 51 (without using a calculator)

§12.2: 9, 12, 43, 53, 54

PRE7: 1

- **Geometric sums**

Read §12.3

§12.3: 49, 50

PRE7: 2,3,4

### Introduction to analytic geometry

- **Parabola**

Read §11.1

§11.1: 11-22, 29-40

§11.4: 9-12

PRE8: 1,2

- **Ellipse**

Read §11.2

§11.2: 10-21, 33-44

§11.4: 5-8

PRE8: 3,4

- **Hyperbola**

Read §11.3

§11.3: 9-20, 31-42

§11.4: 13-16

PRE8: 5,6