

Chapter 1

Section Suggested Problems

1.1	3, 6, 7, 10, 11, 12, 14, 15, 19, 20, 27, 28, 31, 33.
1.2	5, 11, 13, 19, 21, 28, 29, 35, 36, 37, 38.
1.3	14, 16, 18, 19, 21, 27, 28, 29, 31, 38, 43, 47, 49-51, 54.
1.4	31, 33, 37, 38, 39, 40, 41 (more of the earlier problems for practice if necessary)
1.5	10, 11, 12, (see the remark below) 19-22, 36, 37, 42, 45, 46, 47.
1.6	1-5, 7, 10, 15, 20, 23, 25, 28.
1.7	2-4, 17, 18, 20.
1.8	1, 2, 12, 13, 15 (parts (a)-(c) for 12, 13 and 15), 29, 37, 41.
Review	1, 2, 3, 4, 26, 27, 34, 45, 46, 50.

Important Remark. In this class we will make a difference between exact and approximate values of real numbers. For example, in this class it is wrong to write $\pi = 3.14159$. Instead, one should write $\pi \approx 3.14159$. The book is not careful to make this distinction. For example, the statements $\sin(\pi/12) = 0.259$ and $\cos(\pi/5) = 0.809$ on page 35 are wrong. It can be calculated that

$$\sin(\pi/12) = \frac{-1 + \sqrt{3}}{2\sqrt{2}} \quad \text{and} \quad \cos(\pi/5) = \frac{1}{4} (1 + \sqrt{5}).$$

Learn few more functions:

- Explore the functions abs, sign, floor, ceiling and fractional part (fpart) on your calculator. Notice that your calculator might not give you accurate graphs of these functions. Explore particular values of these functions and sketch by hand accurate graphs.
- Just to illustrate how rich is the world of functions explore (for example: find domain and range and sketch accurate graphs by hand) the following:

$x \mapsto x \operatorname{abs}(x)$	$x \mapsto x(1 - \operatorname{abs}(x))$
$x \mapsto x \operatorname{sign}(x)$ (Do you recognize this function?)	$x \mapsto \operatorname{ceiling}(x) - \operatorname{floor}(x)$
$x \mapsto x - \operatorname{floor}(x)$	$x \mapsto \operatorname{floor}(x)(x - \operatorname{floor}(x))$
$x \mapsto (1 + \operatorname{sign}(x))/2$	$x \mapsto x(1 + \operatorname{sign}(x))/2$
$x \mapsto \operatorname{sign}(\operatorname{abs}(x))$	$x \mapsto \operatorname{abs}(\operatorname{sign}(x))$
$x \mapsto \operatorname{floor}(\operatorname{abs}(x))$	$x \mapsto \operatorname{ceiling}(\operatorname{abs}(x))$
$x \mapsto \operatorname{floor}\left(\frac{1}{x}\right)$	$x \mapsto \frac{1}{\operatorname{floor}\left(\frac{1}{x}\right)}$
$x \mapsto x \operatorname{floor}\left(\frac{1}{x}\right)$	$x \mapsto \cos(\pi \operatorname{floor}(x))$