

HOMEWORK 2

Due on Friday, October 9th, in class.

Exercise 1. (20 points) Solve exercises 2.2 and 2.3 from the textbook.

Exercise 2. (20 points) Solve exercises 3.5 and 3.6 from the textbook.

Exercise 3. (5 points) Let a, b be real numbers such that $0 < a$ and $0 < b$. Show that $a \leq b$ if and only if $a^2 \leq b^2$.

Exercise 4. (5 points) Let a, b be real numbers such that $a < 0$ and $b < 0$. Show that $a \leq b$ if and only if $b^2 \leq a^2$.

Exercise 5. (10 points) Let a, b, c be real numbers. Show that

$$2ab \leq a^2 + b^2$$

and

$$ab + bc + ca \leq a^2 + b^2 + c^2.$$

Exercise 6. (40 points) Solve exercises 4.7, 4.8, 4.14, and 4.16 from the textbook.