

Chapter **5**
COMPLEX NUMBERS
Properties:

1) $|z|^2 = z \cdot \bar{z}$

2) $|z_1 z_2| = |z_1| \cdot |z_2|$. In general $|z_1 z_2 \dots z_n| = |z_1| |z_2| \dots |z_n|$

3) $|z^n| = |z|^n$, $n \in \mathbb{Z}$

4) $\frac{|z_1|}{|z_2|} = \frac{|z_1|}{|z_2|}$

5) Triangle in equality

$$|z_1 + z_2| \leq |z_1| + |z_2| \Rightarrow |z_1 + z_2 + z_3 + \dots + z_n| \leq |z_1| + |z_2| + \dots + |z_n|$$

6) $|z_1 - z_2| \geq ||z_1| - |z_2||$

7) $|z_1 + z_2|^2 = (z_1 + z_2)(\bar{z}_1 + \bar{z}_2) = |z_1|^2 + |z_2|^2 + z_1 \bar{z}_2 + z_2 \bar{z}_1$