Math 431 Complex Analysis Spring 2020 HW 3

(1) Chapter 3 Q 16,17

(2) Chapter 4 Q 1, 3,11,16,17,18,19

(3) (a) If x, y and z are three points in $\mathbb{C}$, and $(x - z)/(y - z) = re^{i\theta}$, what is the geometrical significance of θ?

(b) Show that three distinct points $x, y, z \in \mathbb{C}$ lie on a line if and only if $(x - z)/(y - z) \in \mathbb{R}$.

(c) Show that four distinct points $x, y, z, t \in \mathbb{C}$ lie on a straight line or circle if and only if
$$\frac{(x - z)(y - t)}{(x - t)(y - z)} \in \mathbb{R}.$$