Integration

1.1 Contours

Definition 1.1 (Arc). An arc is a *function* $z(t) = x(t) + iy(t)$ on some interval $t \in [a, b]$. Some further classifications of these arcs

1. An arc is **simple** if $z(t_1) \neq z(t_2)$ if $t_1 \neq t_2$. That is it not self intersecting
2. An arc is **simple closed** if it is simple except for $z(a) = z(b)$.
3. An arc is **positively oriented** if it travels "counterclockwise"
4. An arc is **negatively oriented** if it travels "clockwise"

Example 1.1. Consider $z(\theta) = e^{i\theta}$ on the interval $\theta \in [0, 2\pi)$. Pictorally