1. Mark \( z = 1 + \sqrt{3}i \) on the complex plane. What are its polar coordinates? Then mark \( z^n \) for \( n = 1, 2, 3, 4 \). What is each in the form \( a + bi \)? What is each one in the form \( Ae^{i\theta} \)? Then mark \( z^n \) for \( n = 0, -1, -2, -3, -4 \).

2. Find a complex number \( a + bi \) such that \( e^{a + bi} = 1 + \sqrt{3}i \). In fact, find all such complex numbers. For definiteness, fix \( b \) to be positive but as small as possible. (This is probably the first one you thought of.) What is \( e^{n(a + bi)} \) for \( n = 1, 2, 3, 4 \)? (Hint: \( e^{n(a + bi)} = (e^{a + bi})^n \).) How about for \( n = 0, -1, -2, -3, -4 \)?