Problem 1 (30 points): Let Γ be the square whose sides have length 5, are parallel to the real and imaginary axis, and the center of the square is \( i \). Compute the integrals of the following functions over Γ in the counterclockwise direction:

1) \( \frac{z - 1}{z + 1} \)
2) \( \frac{e^z}{z^2 + 2z + 1} \)