(1) Evaluate $\int_C |z|^2\,dz$, where $C$ is $x = t^2$, $y = \frac{1}{t}$, $1 \leq t \leq 2$.

(2) Express $\ln(-\sqrt{3} + i)$ in the form $a + ib$.

(3) Find all values of $z$ satisfying the equation $\cos z = -3i$.

(4) Sketch the set of point(s) in the complex plane satisfying the inequality $|z + 2 + 2i| \leq 2$. 