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Assignment 9 - Complex Integration
Due April 9th

1. (0.5 pts each) Compute the following integrals:
   a) $\int_0^3 (t-2i)^2\,dt$
   b) $\int_{L_1} (z-2i)^2\,dz$ where L_1 is the straight line from 0 to $3i$
   c) $\int_{L_2} (z-2i)^2\,dz$ where L_2 is the straight line from 3 to $3+3i$
   d) $\int_{L_3} (z-2i)^2\,dz$ where L_1 is the straight line from $3i$ to $3+3i$
2. (1 pt each) Let C be the circle of radius 1 around 0. Compute the following integrals:
   a) $\int_C \frac{1}{z}\,dz$
   b) $\int_C \frac{z+1}{z}\,dz$
3. (1 pt) Explain how your results from problems 1. and 2. verify the Cauchy-Goursat theorem.