1. Let $C$ denote the positive oriented boundary of a square whose sides lie along the lines $x = \pm 4$ and $y = \pm 4$. Evaluate each of these integrals:

(a) $\int_C \frac{\cos z}{z^2 + \pi^2} \, dz$

(b) $\int_C \frac{2z + 1}{(z^2 + 1)^2} \, dz$

2. Do problem #7 on page 163.

3. Evaluate $\int_C e^z \left(4z^2 + \pi^2\right)^2 \, dz$, where $C$ is the circle $|z| = 2$.

4. Find the limit of the following sequences.

(a) $z_n = \frac{n + i}{1 - ni}$

(b) $z_n = n \sin\left(\frac{1}{n}\right) + i \frac{2n}{\sqrt{1 + n^2}}$