Figures Calculus III

Felix Claeys, Brecht Verbeken, Simon Verbruggen

September 27, 2025

1.2.3 Example evolute cycloid

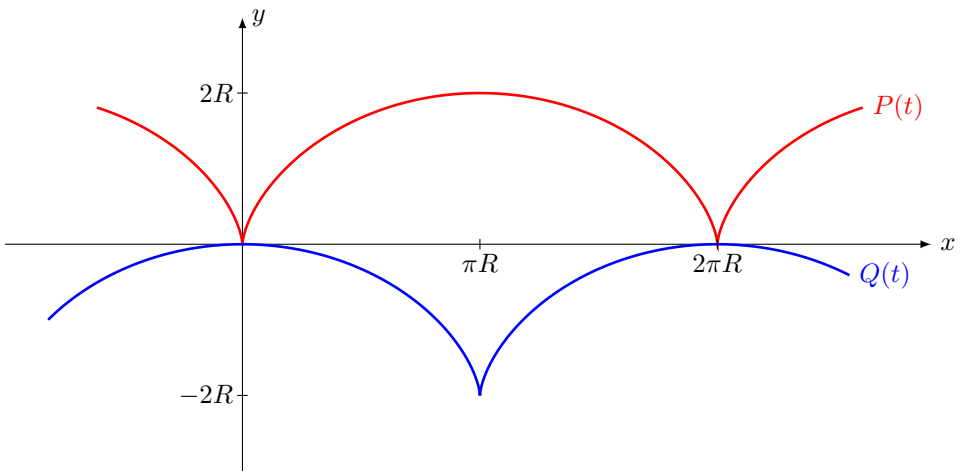


Figure 1: The cycloid $P(t) = [R(t - \sin t), R(1 - \cos t)]$ and its evolute $Q(t) = [R(t + \sin t), R(\cos t - 1)]$, which is a translation of $P(t)$.

1.2.4 Example evolute catenary

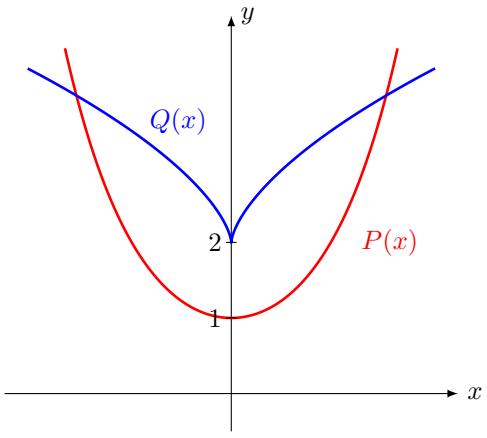


Figure 2:

1.2.5 Example involute catenary (tractrix)

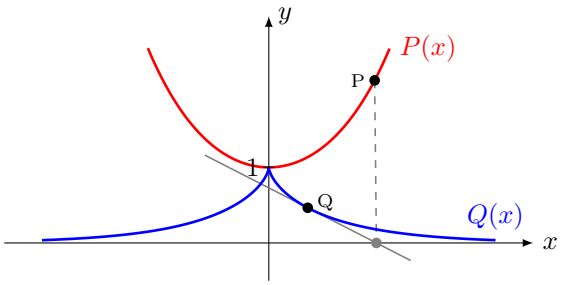


Figure 3:

1.2.8 Example envelope family of straight lines

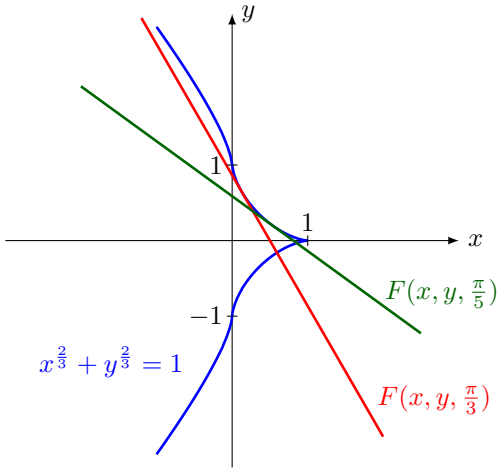


Figure 4:

2.3 Gradient of scalar field

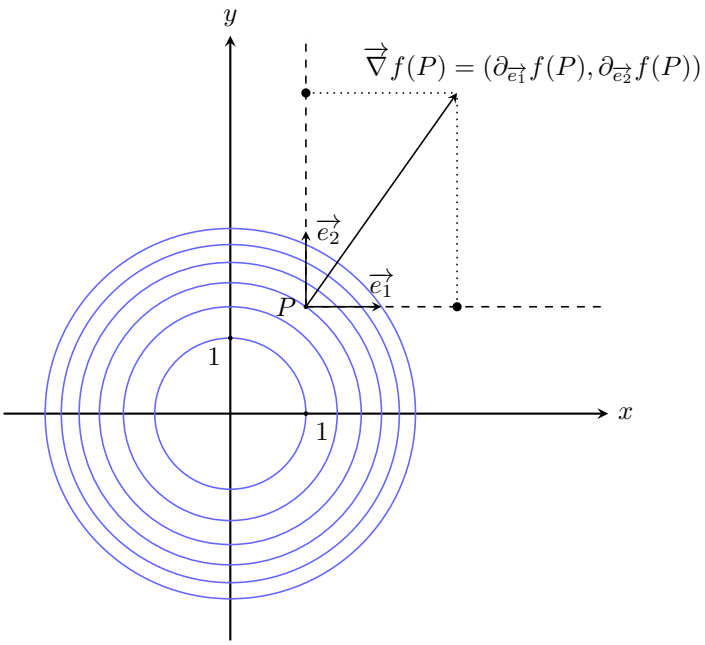


Figure 5:

3.1 Line integral of a scalar field

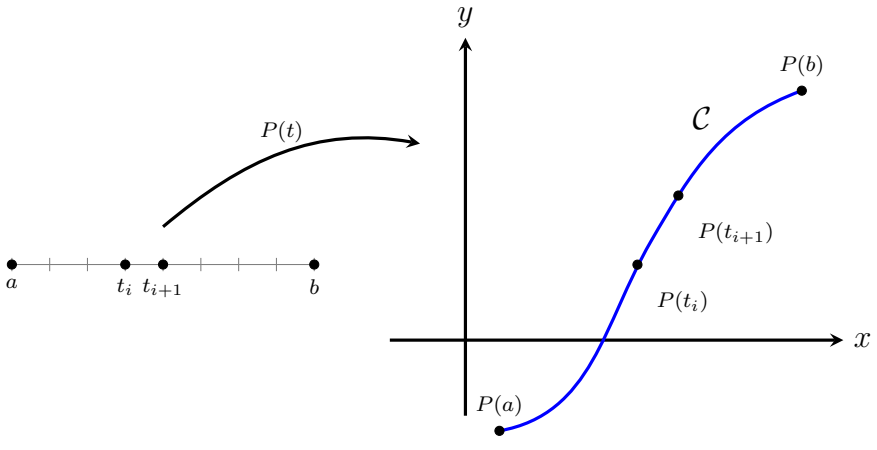


Figure 6:

3.2 Line integral of a vector field

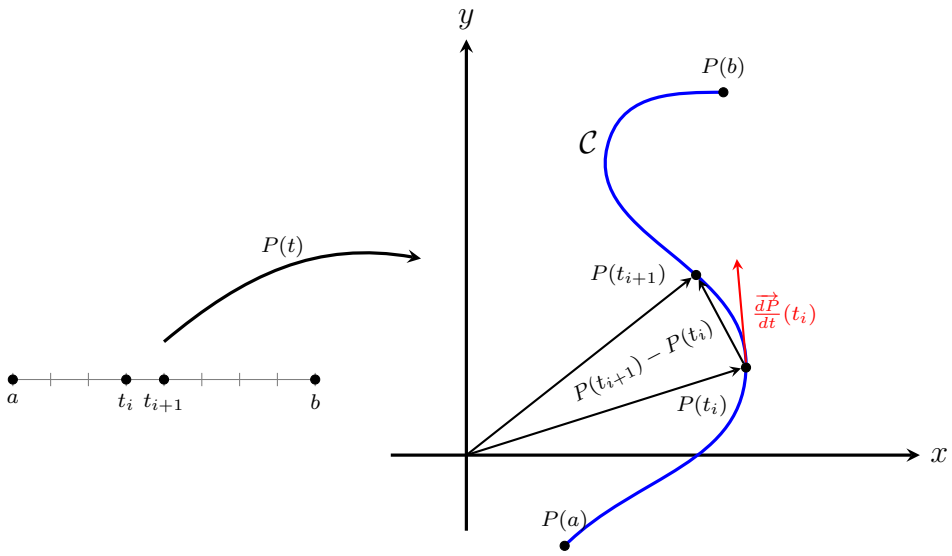


Figure 7:

3.4.2 Conservative field along a curve

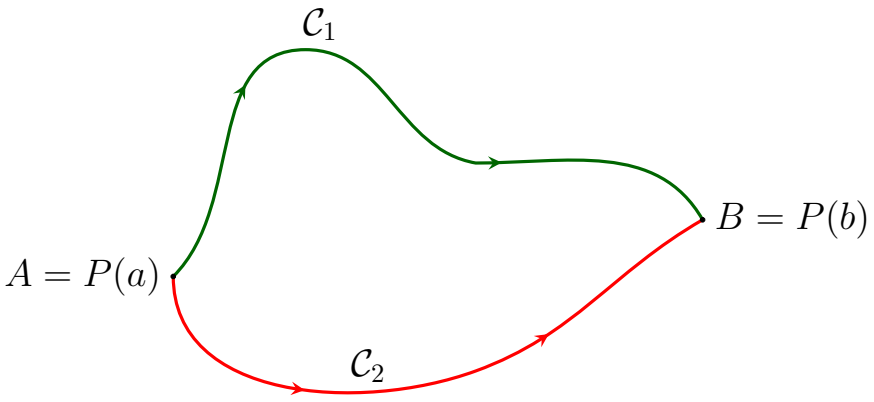


Figure 8:

3.4.3 Proof conservative field

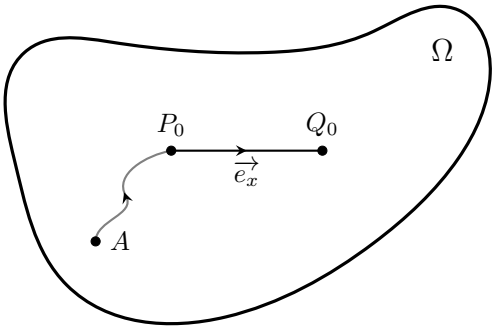


Figure 9:

3.5.1 Proof Greens theorem

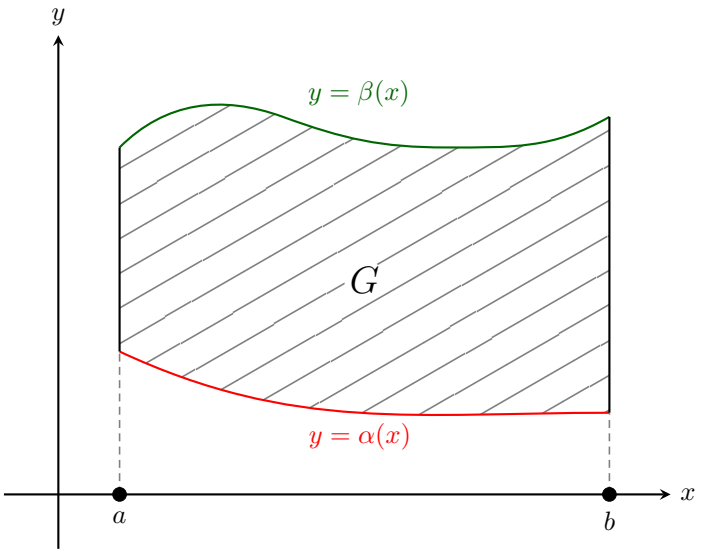


Figure 10:

3.5.2 Union of normal spaces

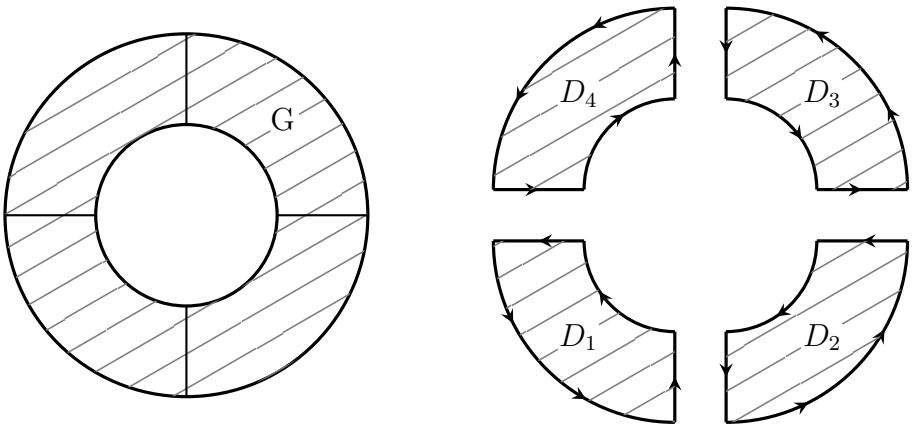


Figure 11:

3.5.4 Alternative formulation Greens theorem

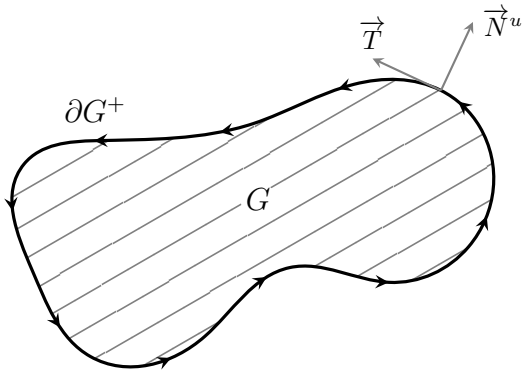


Figure 12:

4.1 Surface integral of a scalar field

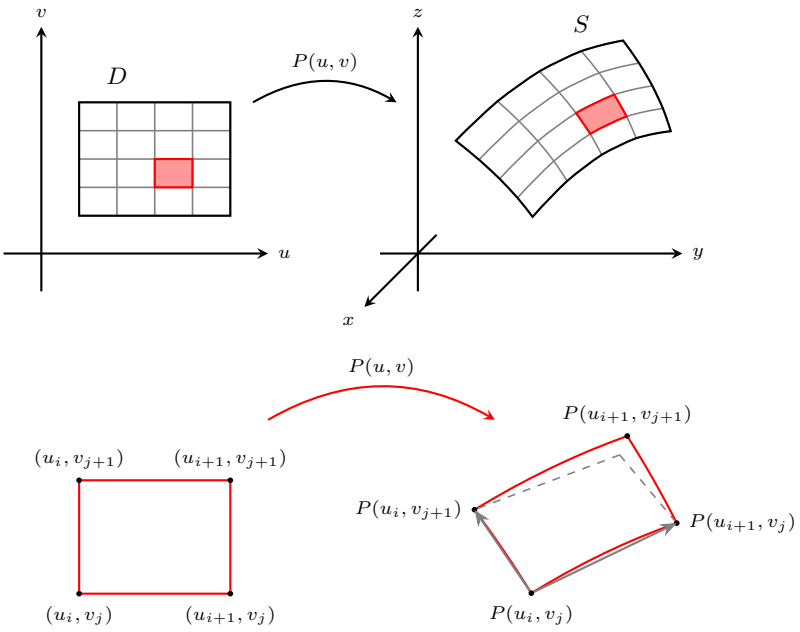


Figure 13:

4.4.1 The divergence theorem

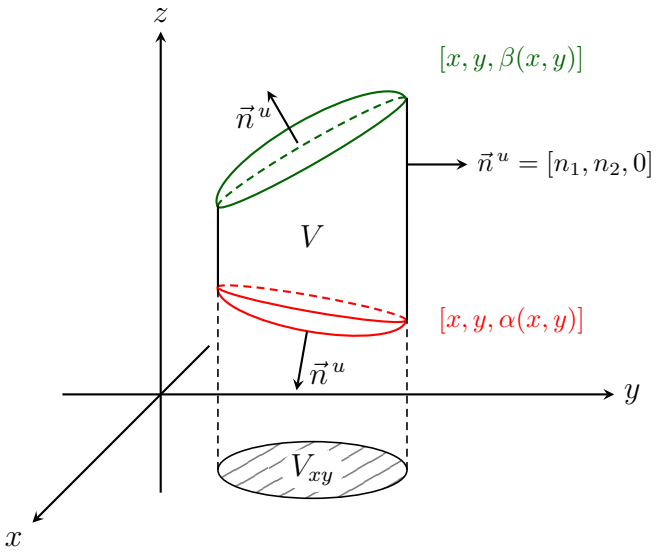


Figure 14:

4.6.0 The corkscrew rule

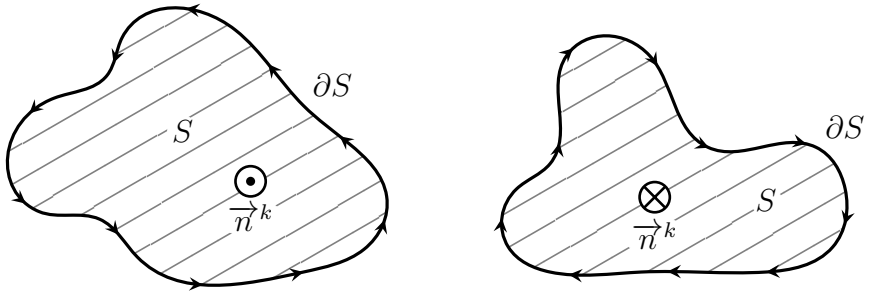


Figure 15:

4.6.1 Stokes theorem

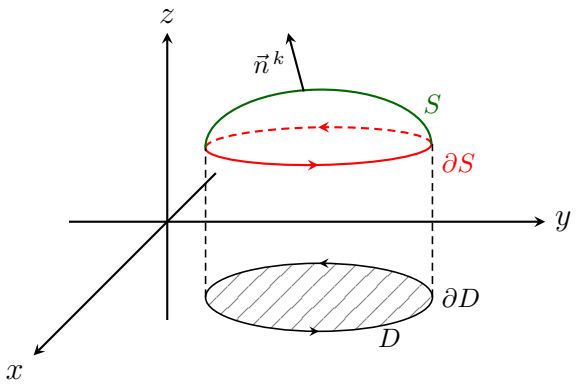


Figure 16:

5.1 Inverse function

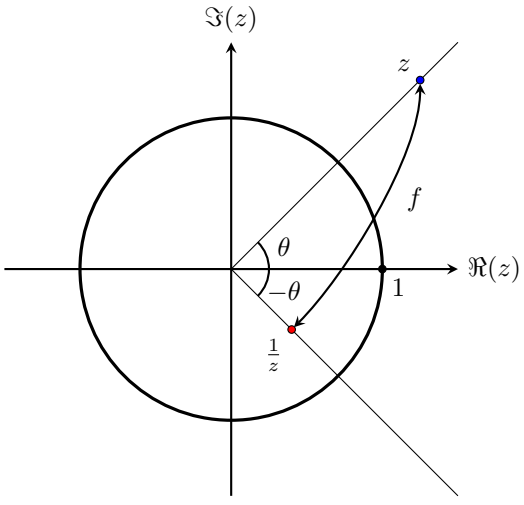


Figure 17:

5.1 Complex function

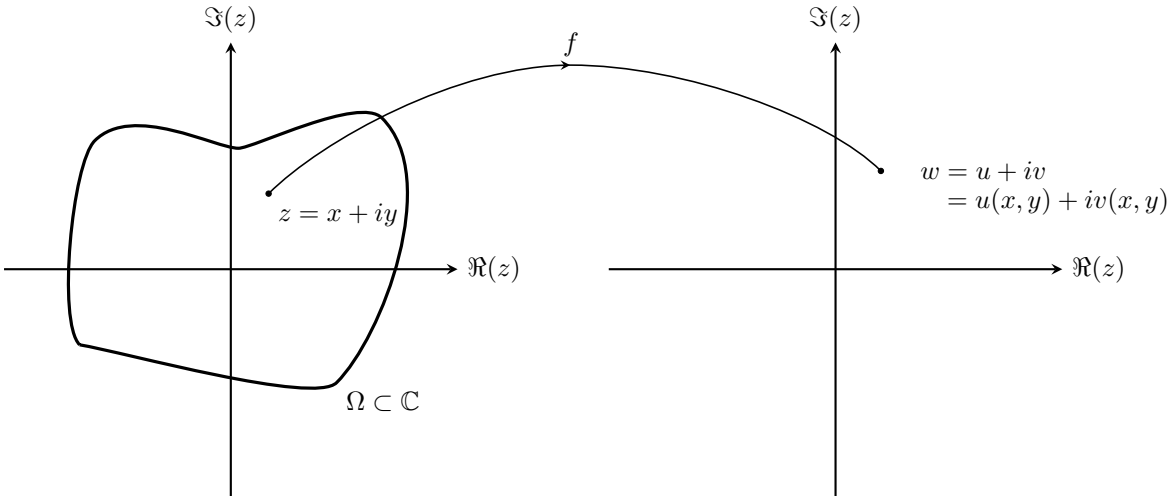


Figure 18:

5.2 Complex line integral

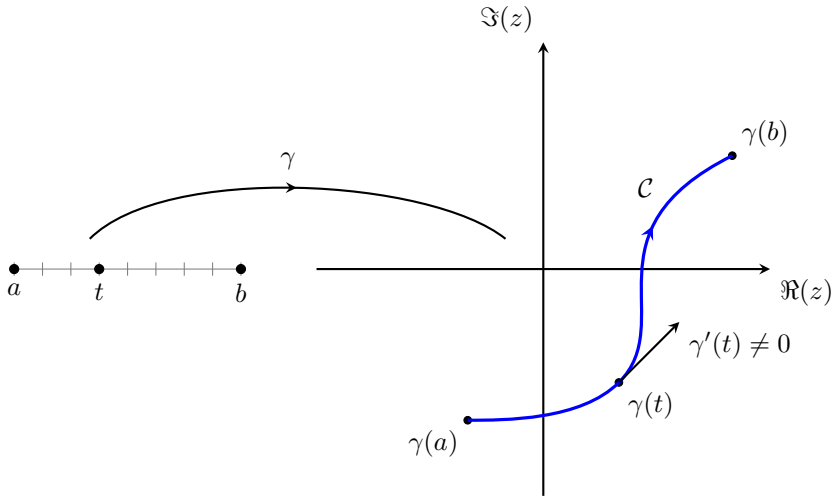


Figure 19:

6.2.1 Complex derivative

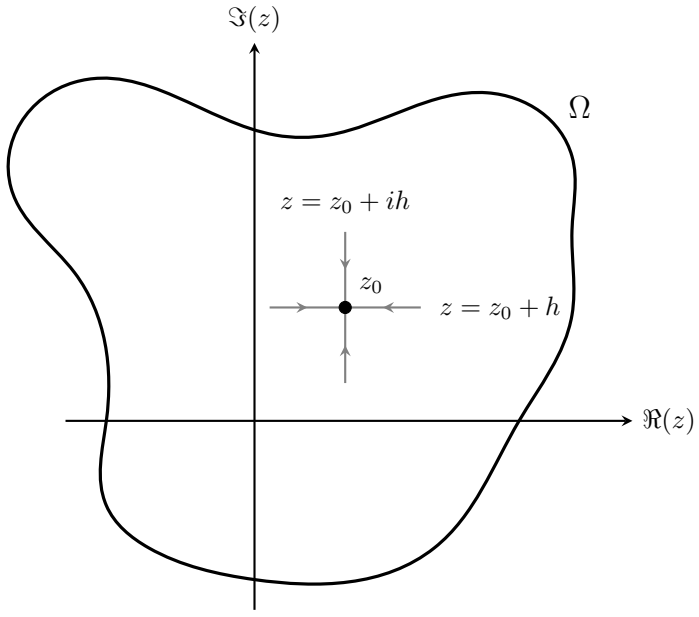


Figure 20:

6.3 Cauchy Goursat theorem for multiply connected domains

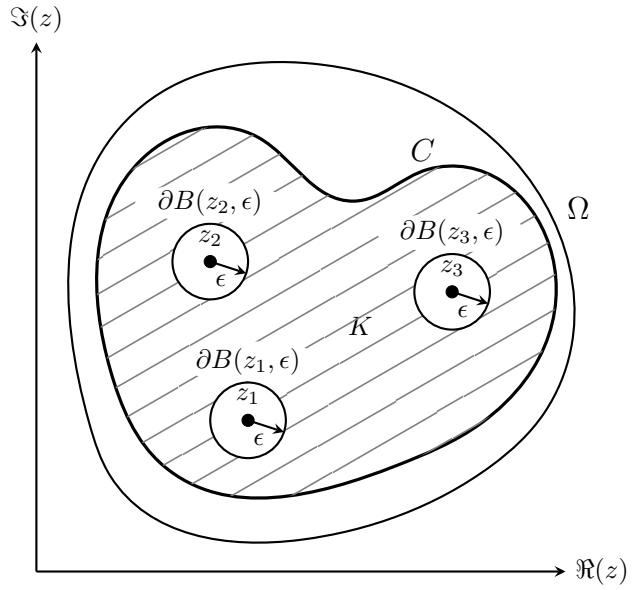


Figure 21:

6.3 Contour non simply connected

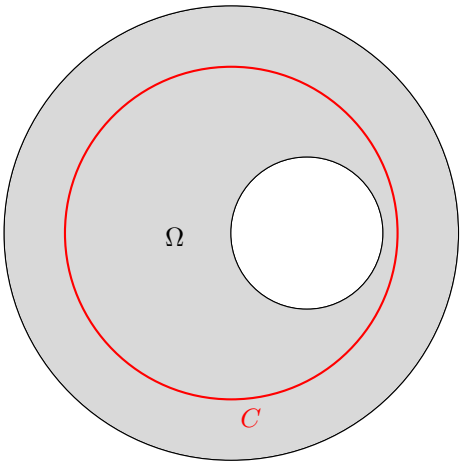
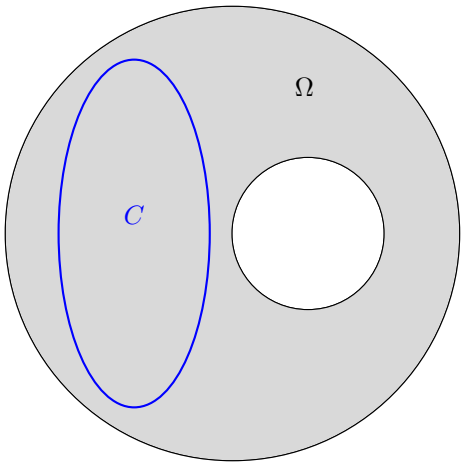


Figure 22:

6.3 Contour simply connected



6.3.3 Proof integral formula Cauchy

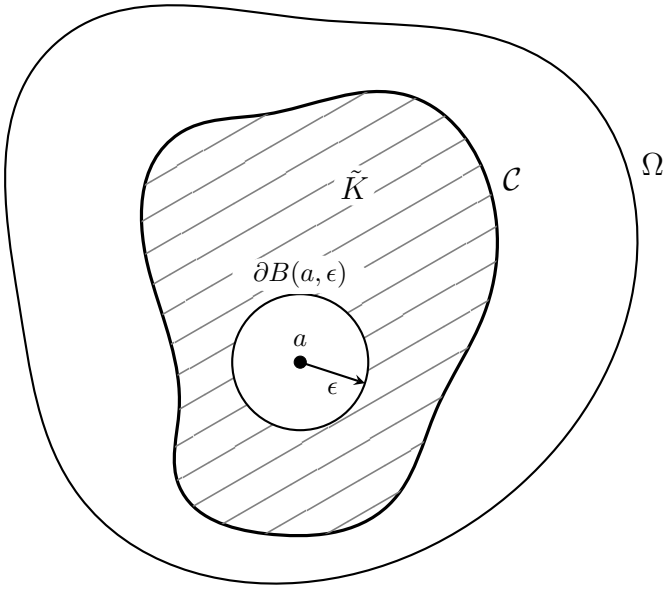


Figure 24:

7.2.4 Theorem convergence regions positive and negative power series

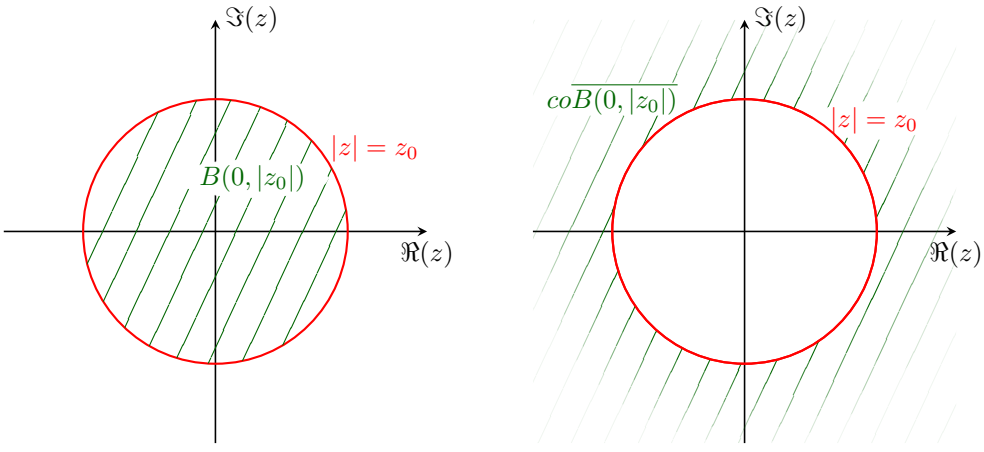


Figure 25:

8.2.1 Proof theorem Laurent series

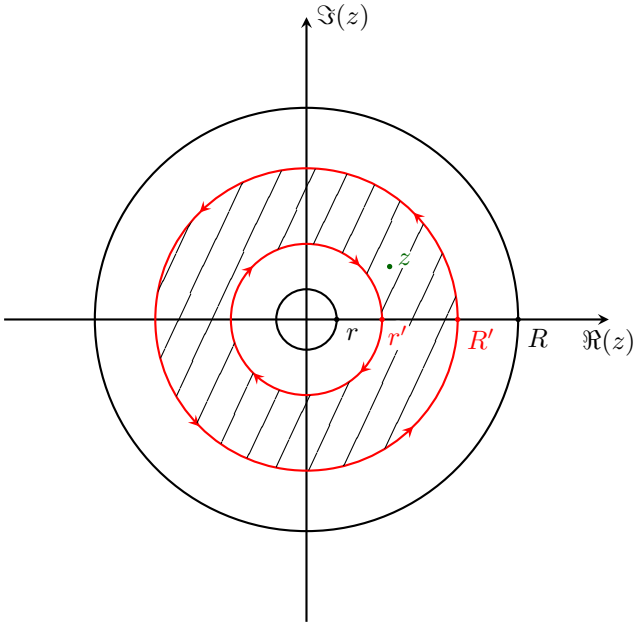


Figure 26:

8.5.6 Residue theorem for region with multiple singularities

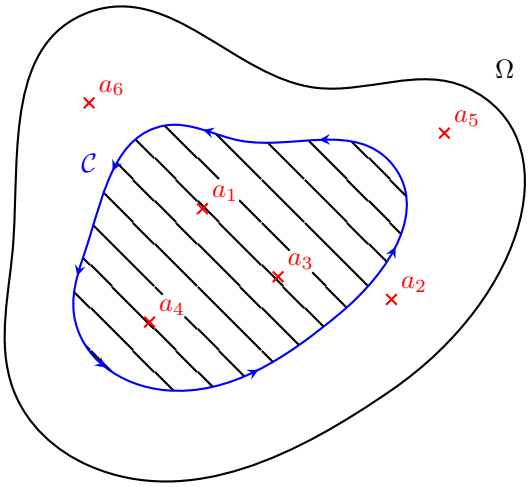


Figure 27:

9.3 Estimation lemmas

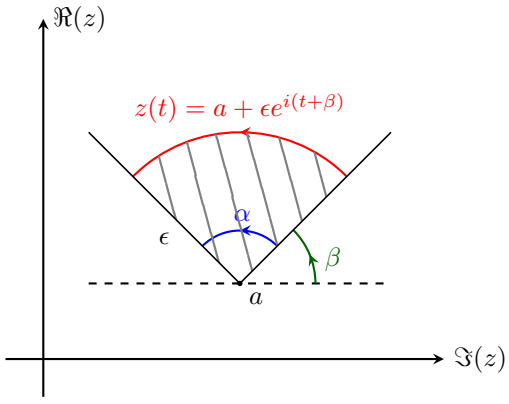


Figure 28:

9.5 Summation of series

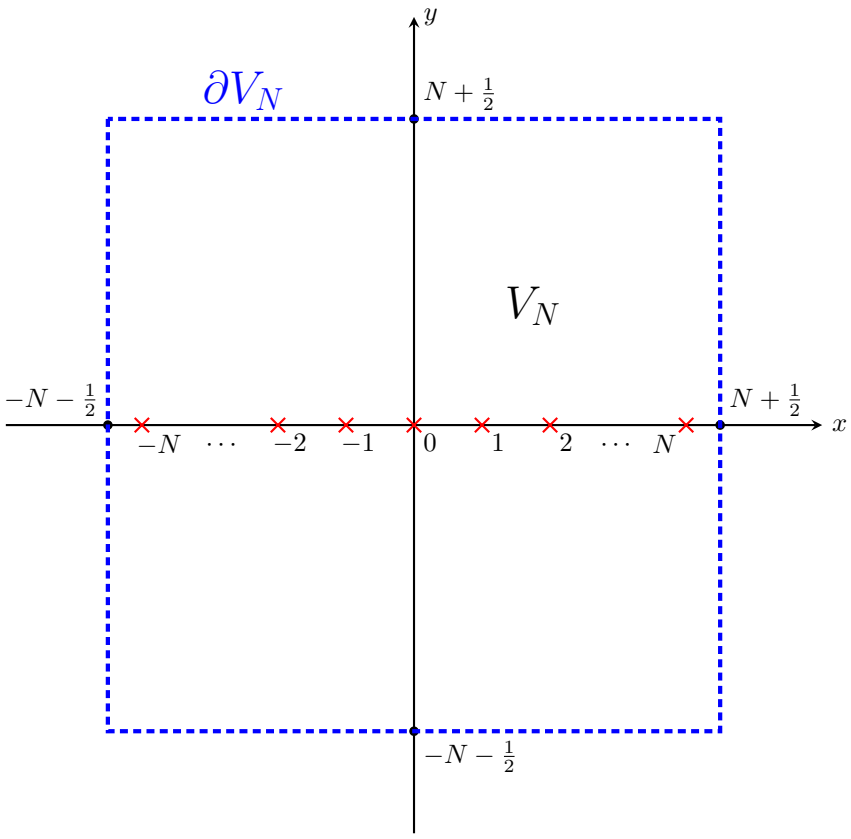


Figure 29: