

[gex19] Constructing inverse trigonometric functions I

Start from the definitions of the sine and cosine functions for complex variables to construct the principal-branch expressions for the inverse sine and tangent functions:

$$\arcsin z = \frac{1}{i} \ln \left(iz + \sqrt{1 - z^2} \right), \quad \arctan z = \frac{1}{2i} \ln \left(\frac{1 + iz}{1 - iz} \right).$$

Solution: