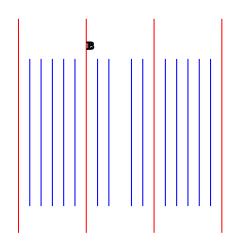
Keywords-complex analysis; special functions; elementary functions; Lambert W; multivalued functions

I. INTRODUCTION

 $_k() \quad W_k(z) =$ and $_k() \rightarrow \ln_k$,

where $\ln_k = \ln$



Observe that

$$\exp\left(\mathfrak{W}_{mn}(\cdot)\right) = \exp\left(-m(\cdot)\right) / \exp\left(-n(\cdot)\right)$$

the branch cut for $_{-1}$ is $(-\infty,0].$ Further, both branches are closed on the top, meaning that for $~\leq -1/$

$$_{0}() = \lim_{y \downarrow 0} _{0}(+)$$
, and for < 0



Figure 3. The domain of \mathfrak{W} (the -plane). The branch cut is shown as two lines, one representing the upper side (ABC) and one representing the lower side (DEF). The points B and E are either side of = -1/e.

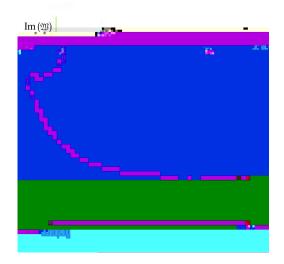


Figure 4. The range of $\mathfrak{W}_{0(-1)}(\)$. The letters correspond to the points labelled by the same letters in the domain of \mathfrak{W} , shown in figure 3. Notice that the image lines BA and EF, together with the images of the other axes in the domain converge to 2π as a result of (14).

REFERENCES