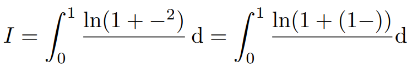
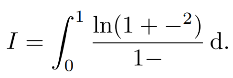
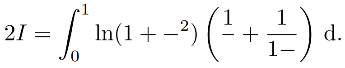
Put

.

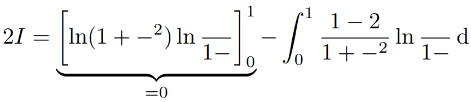
If we change to 1- we get

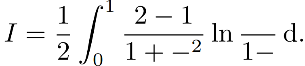


Consequently

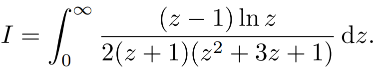


The net step will be integration by parts.



Then 

If we substitute  we get



In order to evaluate this integral we integrate along a keyhole contour and use residue calculus. We get that



where