1. The group $G$ is one-dimensional, so the elements are described by a single real number $x$ that runs from $-\infty$ to $\infty$, and has coordinate multiplication rule

$$\mu(x, y) = \frac{x + y}{1 - xy}$$

(a) What is $e$, such that $\mu(x, e) = \mu(e, x) = x$?
(b) Check the associative rule explicitly.
(c) Work out the left or right measure for this group (they will be the same), and find the volume of this group. Is this group compact?