Answer on Question#53954 – Math – Real Analysis

Question. Find a bijection $f: (a, b) \to (0,1)$.

Solution. We shall find f in the next form: $f = kx + c$. Using $\begin{cases} f(a) = 0 \\ f(b) = 1 \end{cases}$ we have:

$$\begin{cases} ka + c = 0 \\ kb + c = 1 \end{cases} \Rightarrow \begin{cases} ka + c = 0 \\ k(b - a) = 1 \end{cases} \Rightarrow \begin{cases} k = \dfrac{1}{b-a} \\ c = -\dfrac{a}{b-a} \end{cases} \Rightarrow f(x) = \dfrac{x-a}{b-a}.$$

Answer. $f(x) = \dfrac{x-a}{b-a}.$