From (b),

$$(x+y+z)\left(\frac{1}{x}+\frac{1}{y}+\frac{1}{z}\right) \geq 9, x, y, z \in \mathbb{R}^{+}$$

.

Set $x = b+c, y = c+a, z = a+b$, we have

$$(b+c+c+a+a+b)\left(\frac{1}{b+c}+\frac{1}{c+a}+\frac{1}{a+b}\right) \geq 9,$$

which proves the claim.