$$sin\alpha(1+tan\alpha)+cos\alpha(1+cot\alpha)=?$$

Solution:

$$sin\alpha(1+tan\alpha)+cos\alpha(1+cot\alpha)=sin\alpha\left(1+\frac{sin\alpha}{cos\alpha}\right)+cos\alpha\left(1+\frac{cos\alpha}{sin\alpha}\right)$$
$$=sin\alpha\frac{cos\alpha+sin\alpha}{cos\alpha}+cos\alpha\frac{sin\alpha+cos\alpha}{sin\alpha}$$
$$=(cos\alpha+sin\alpha)\left(\frac{sin\alpha}{cos\alpha}+\frac{cos\alpha}{sin\alpha}\right)$$
$$=(cos\alpha+sin\alpha)\left(\frac{sin^2\alpha+cos^2\alpha}{cos\alpha*sin\alpha}\right)=\frac{cos\alpha+sin\alpha}{cos\alpha*sin\alpha}=\frac{1}{sin\alpha}+\frac{1}{cos\alpha}$$

Answer: $\frac{1}{sin\alpha}+\frac{1}{cos\alpha}$