C11 - 6.7 - Sum of Reciprocals Consecutive Integers Notes

The sum of the reciprocals of two consecutive integers is $\frac{5}{6}$. What are the integers?

$Let\ "x"\ =\ 1st\ \#$
$Let\ x+1=2nd\ \#$

$$\frac{1}{x}+\frac{1}{(x+1)}=\frac{5}{6}$$

Restrictions

$x \neq 0$ $x \neq -1$

$$\frac{1}{x}+\frac{1}{(x+1)}=\frac{5}{6}$$

$$\left(\frac{1}{x}+\frac{1}{(x+1)}=\frac{5}{6}\right)\times LCD$$

$LCD: 6x(x+1)$

$$6(x+1)+6x=\ 5x(x+1)$$
$$6x+6+6x=\ 5x^2+5x$$
$$0=5x^2-7x-6$$
$$0=(5x^2-10x)+(3x-6)$$
$$0=5x(x-2)+3(x-2)$$
$$0=(5x+3)(x-2)$$

$x=2$

$1st\ number=2$
$2nd\ number=3$

$x=-\frac{3}{5}$ Reject

$x=2$