MATH LEAGUE 5TH WEEK SOLUTIONS:

1- CACULATING THE EXRESSION:

X+Y=7 SO (X+Y)^2=49

WE FIND THAT :X^2+Y^2+2XY=49

SINCE X^2+Y^2=10

2XY=39 AND XY=39/2

1/X+1/Y= Y+X/XY
1/X+1/Y=7*2/39

1/X+1/Y=14/39

2- SOLVING THE EQUATION:

$$\frac{x+3}{2022}+\frac{x+2}{2021}+\frac{x+1}{2020}=3$$

$$2041210(x+3)+2042220(x+2)+2043231(x+1)=12381979860$$

$$2041210x+6123630+2042220x+4084440+2043231x+2043231=12381979860$$

$$6126661x+12251301=12381979860$$

$$6126661x=12381979860-12251301$$

$$6126661x=12369728559$$

$$x=2019$$

3-

SOLVING THE EQUATION:

$$\frac{5}{x-1}+\frac{1}{4-3x}=\frac{3}{6x-8}$$

$$\Rightarrow \quad \frac{5}{x-1}=\frac{3}{6x-8}-\frac{1}{4-3x}$$

$$=\frac{3}{6x-8}-\frac{1}{4-3x}$$

$$=\frac{3}{6x-8}+\frac{2}{6x-8}$$

$$=\frac{5}{6x-8}$$

$$\Rightarrow \quad \frac{5}{x-1}=\frac{5}{6x-8}$$

$$\Rightarrow \quad x-1=6x-8$$

$$\Rightarrow \quad 5x=7$$

$$\Rightarrow \quad \boxed{x=\frac{7}{5}}$$