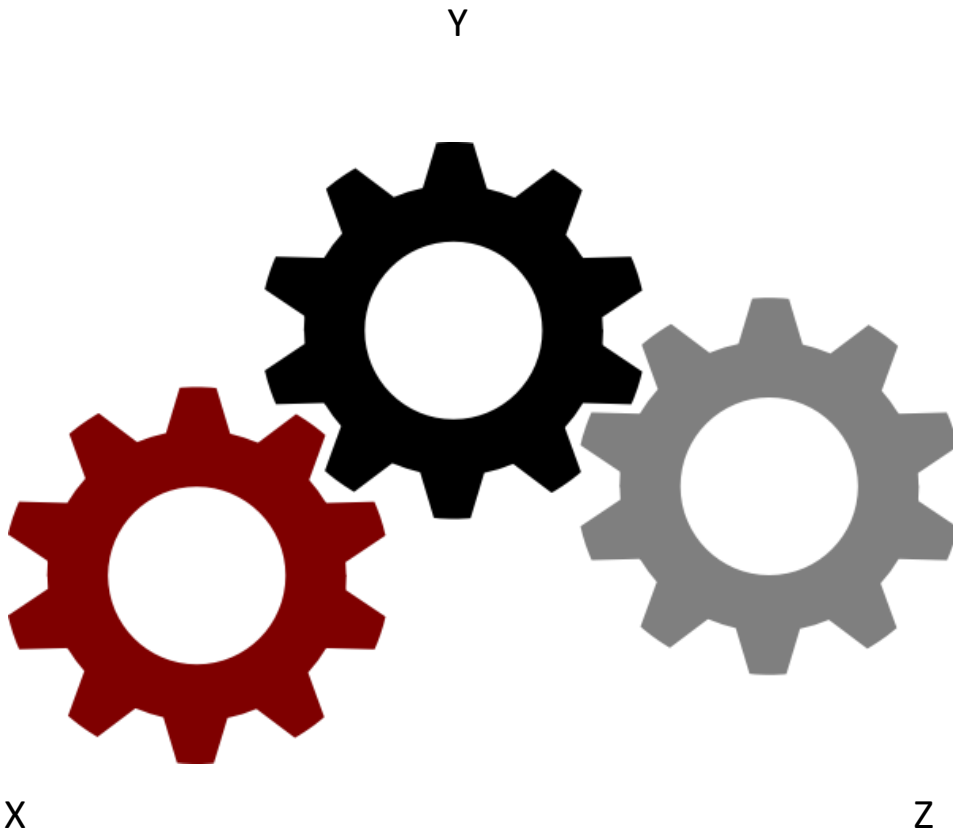


COMPOSITE FUNCTIONS AND GEARS

Suppose we have three gears A , B and C with circumference X , Y , Z. respectively



Let red gear has circumference is X cm, and that of black one is of Y cm.

And third one has circumference Z cm.

One gap of Y is of thickness ΔY and similarly one tooth of X is of thickness ΔX , although these gap and tooth are of approximately of same thickness but number of division of ΔY and ΔX on their respective circumference may be different, usually different,

Hence we have $\frac{\Delta y}{\Delta x}$, similarly between Y and Z $\frac{\Delta z}{\Delta y}$

Suppose g is a function $g: X \rightarrow Y$ and f is a function $f: Y \rightarrow Z$

So we see that functions of gears obey rules of composite functions $\frac{dz}{dx} = \frac{dy}{dx} \frac{dz}{dy}$ and hence chain goes on . which is mathematically $f \circ g(x)$.