Assignment 1

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Download all python codes from

https://github.com/Dhatri-nanda/EE3900/blob/main/Assignment_1/code.py

and latex-tikz codes from

https://github.com/Dhatri-nanda/EE3900/blob/main/Assignment_1/Assignment_1.tex

1 Problem

In $\triangle ABC$, show that the centroid

$$O = \frac{A+B+C}{3} \tag{1.0.1}$$

2 Solution

Let AD be a median of the triangle ABC as shown in the figure
As D is the midpoint of BC

$$D = \frac{B+C}{2} \tag{2.0.1}$$

Let the centroid of the triangle be O
Since O divides AD internally in the ratio 2:1

$$O = \frac{2\left(D\right)+1\left(A\right)}{3} \tag{2.0.2}$$

From (2.0.1)

$$= \frac{2\left(\left(B+C\right)/2\right)+A}{3} \tag{2.0.3}$$

$$= \frac{B+C+A}{3} \tag{2.0.4}$$

Therefore, the centroid of the triangle ABC is

$$O = \frac{A+B+C}{3} \tag{2.0.5}$$

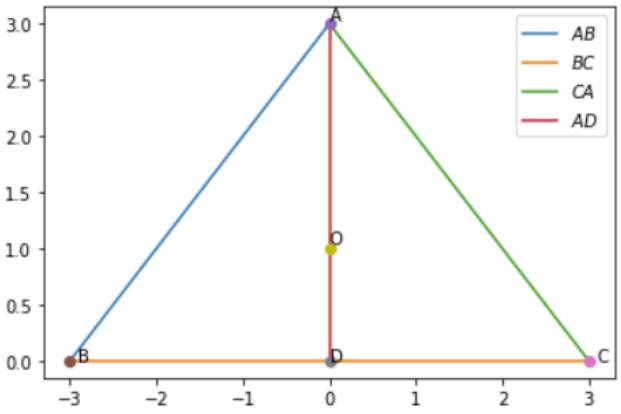

Fig. 0: A simple triangle with a median