MATRICES USING PYTHON

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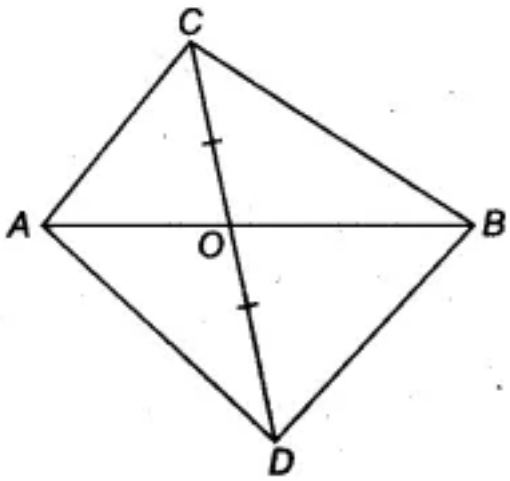
IITH Future Wireless Communication (FWC)

FWC22031 ASSIGN-5

Contents

1 Problem

ABC,ABD are 2 triangles on same base AB,if line segment CD is bisected by AB at O,show that
(i) ar (ABC) = ar (ABD)



2 Solution

Theory:
In 2 triangles with same base and linesegment cd is bisected at o **To Prove:** Ar(ABC)=Ar(ABD)
Theorem : Two triangles on the same base (or equal bases) and having the equal heights are equal in area.

$\therefore$ Ar(Δ ABC)=Ar(Δ ABD).....(1)
Hence, Proved

termux commands :

```
python3 matrix.py
```

The input parameters for this construction are

Symbol	Value	Description
k1	4	length of CD
k2	6	length of AB
O	$\begin{pmatrix}0\\0\end{pmatrix}$	Point O

To Prove: Ar(ABC)=Ar(ABD)

a=A-B
b=C-B
c=B-D
Area of the ΔABC is given by
Ar(ΔABC) $=\frac{1}{2}\|\mathbf{a}\times\mathbf{b}\|$.....(2)
b=C-B
c=B-D
Area of the ΔABD is given by
Ar(ΔABD) $=\frac{1}{2}\|\mathbf{c}\times\mathbf{d}\|$.....(3)

$\therefore$ Ar(ABC)=Ar(ABD).....(4)

The below python code realizes the above construction:

https://github.com/anirudhkalyan/fwc

3 Construction

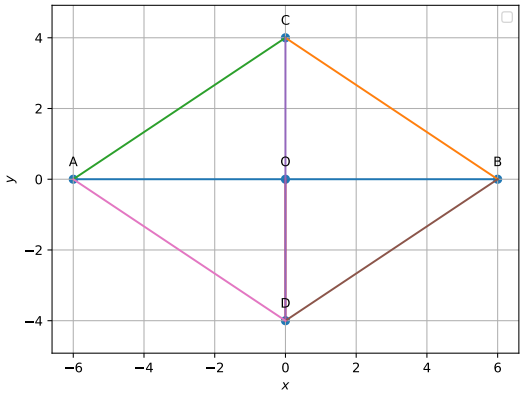


Figure of construction