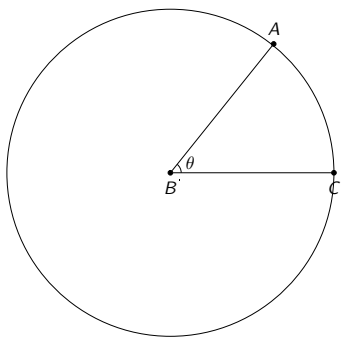
Excercise

Pratibha

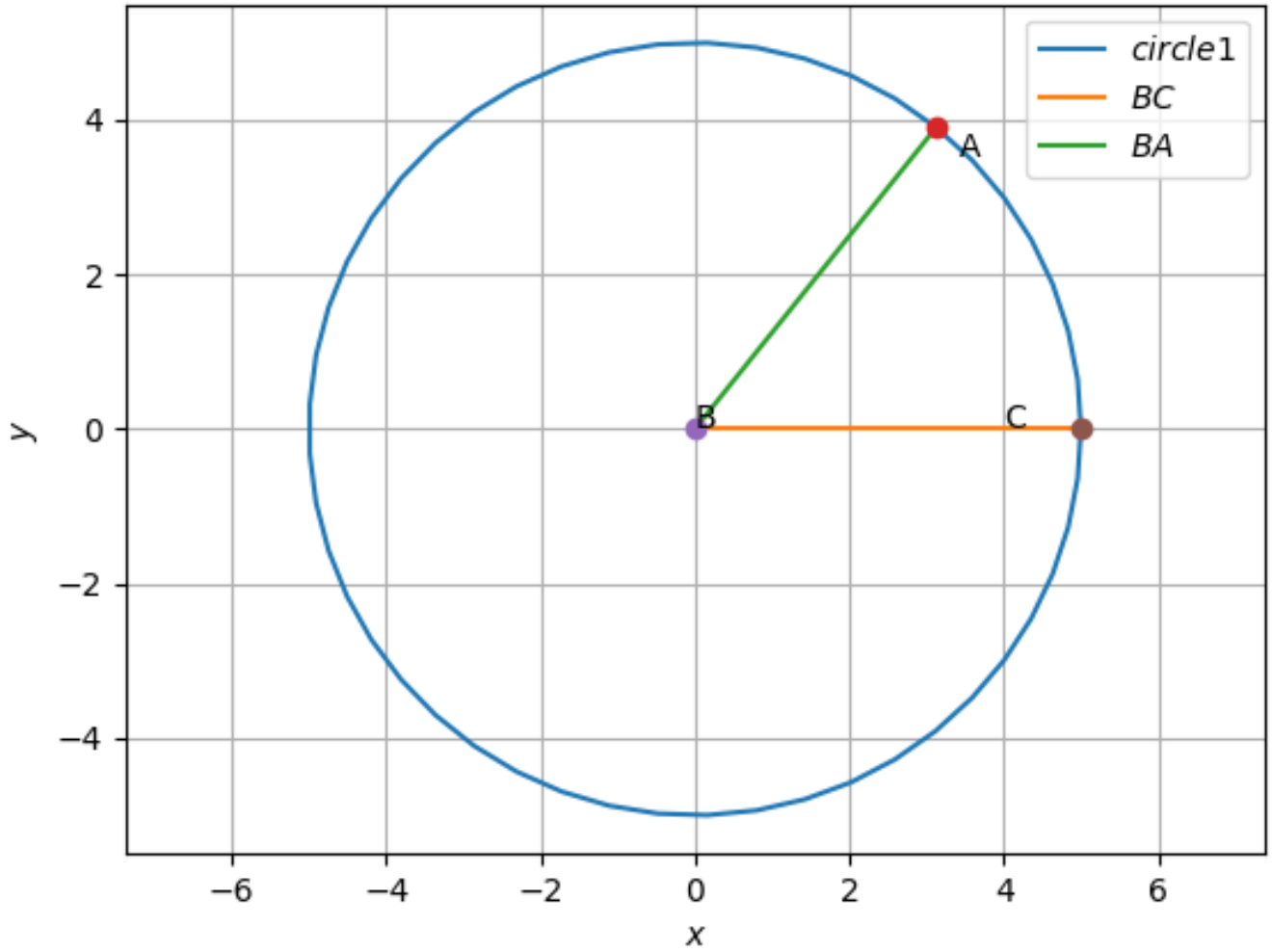
3 Jan 2020

1. The length of the minute hand of a clock is 14 cm. Find the area swept by the minute hand in 5 minutes.

- **Solution** :



https://github.com/pratibha444/GEOMETRY/blob/master/figs/clock.tex


circle1
BC
BA
A
B
C
4
2
0
−2
−4
−6
−4
−2
0
2
4
6
y
x

In 60 minutes minute hand covers 360°
For 5 minutes $6^\circ \times 5 = 30^\circ$
Here $\theta = 30^\circ$ and r = 14cm

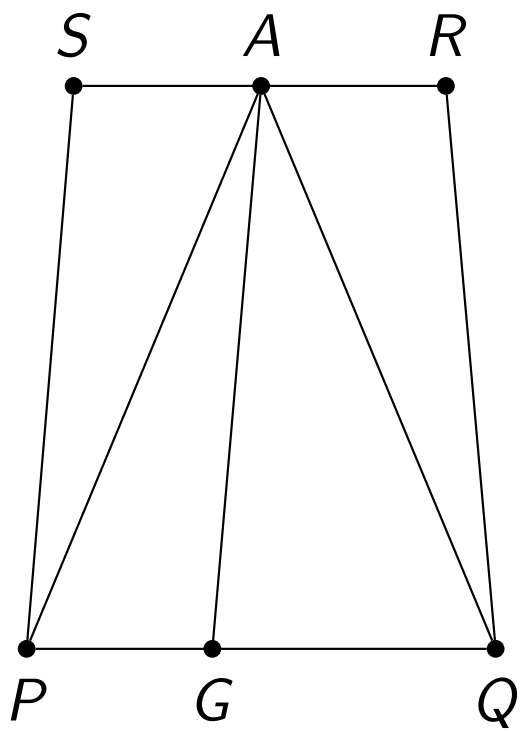
$$\text{Area of sector} = \frac{\theta}{360} \times \pi r^2 = 51.31 cm^2.$$

- https://github.com/pratibha444/GEOMETRY/blob/master/CODES/MISC.py

Quadrilateral excercise

2. A farmer was having a field in the form of a parallelogram PQRS . She took any point A on RS and joined it to points P and Q. In how many parts the fields is divided? What are the shapes of these parts? The farmer wants to sow wheat and pulses in equal portions of the field separately. How should she do it?

- **Solution** :



- After joining the point A to p and Q, the feild is divided into 3 parts.
- All the three parts are in triangle shape.
  As PQRS is a parallelogram so

$$Area\ of\ PQRS = Area\ of \triangle APS + \triangle ARQ + \triangle PAQ - -(1)$$

Area of triangle is half of parallelogram

if they have same base and lie between same parallel lines.

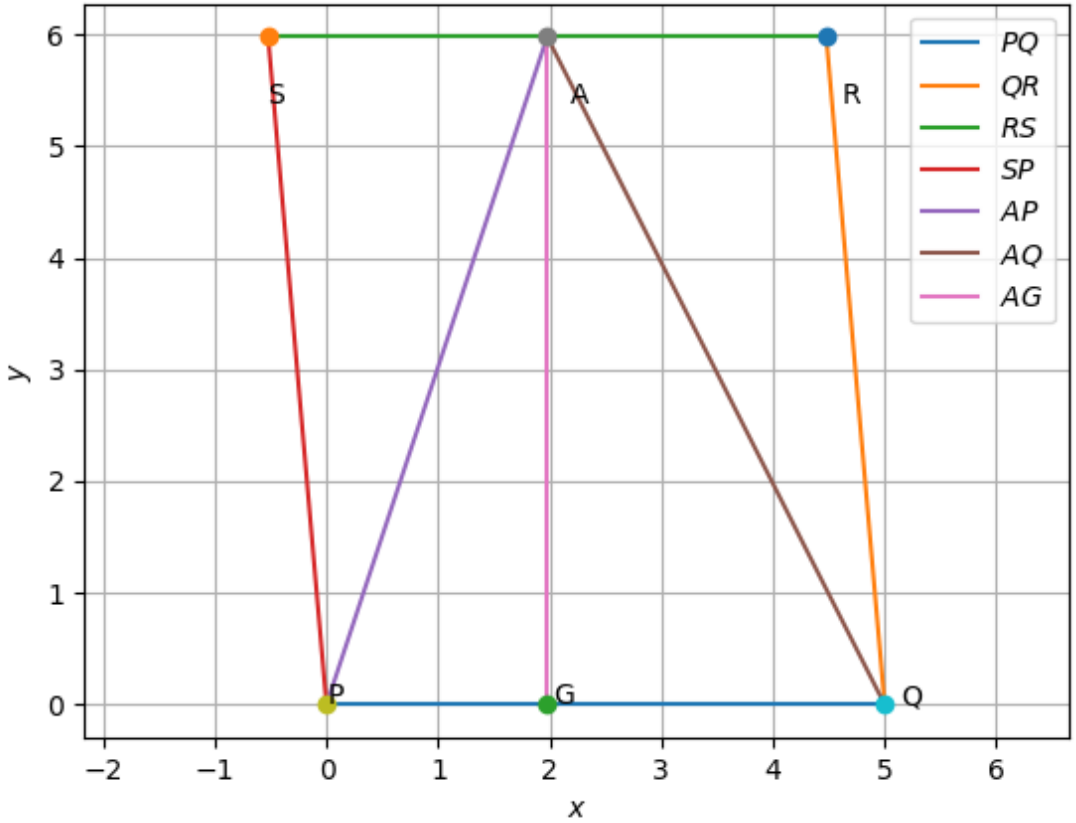
$$Area\ of \triangle PAQ = \frac{1}{2} Area\ of\ PQRS$$

$$\triangle PAQ = \frac{1}{2} area(\triangle APS + \triangle ARQ + \triangle APQ$$

$$2\triangle PAQ - \triangle PAQ = area(\triangle APS + \triangle ARQ)$$

$$\triangle PAQ = \triangle APS + \triangle ARQ$$

Hence the farmer can sow wheat in $\triangle PAQ$ *and pulses in* $\triangle APS$ *and* $\triangle ARQ$

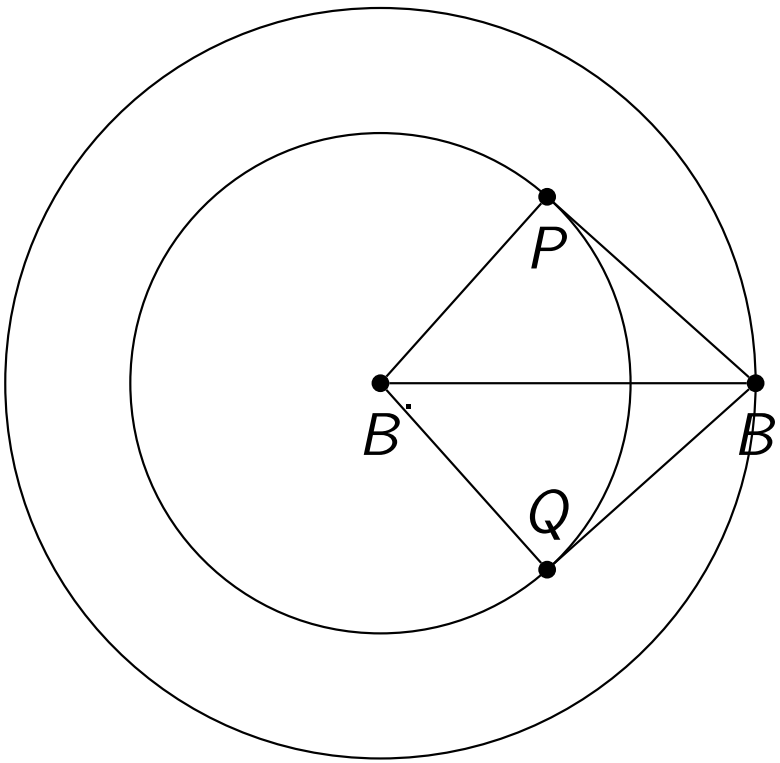


- https://github.com/pratibha444/GEOMETRY/blob/master/figs/FARM.tex
- https://github.com/pratibha444/GEOMETRY/blob/master/CODES/quad/QUAD_EXCERCISE.py

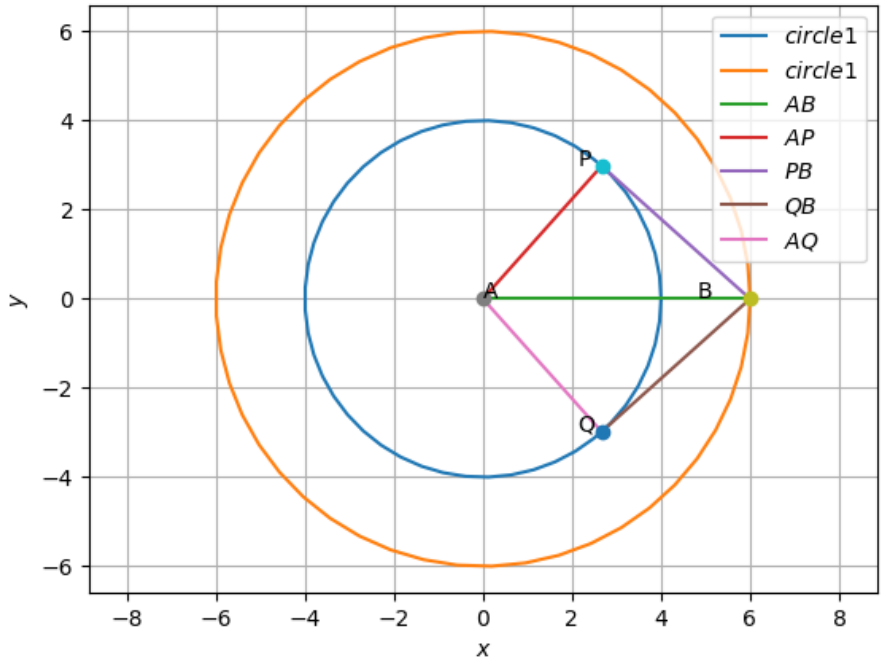
Circle construction

Construct a tangent to a circle of radius 4 units from a point on the concentric circle of radius 6 units.

- **Solution** :



PB and QB are the tangents

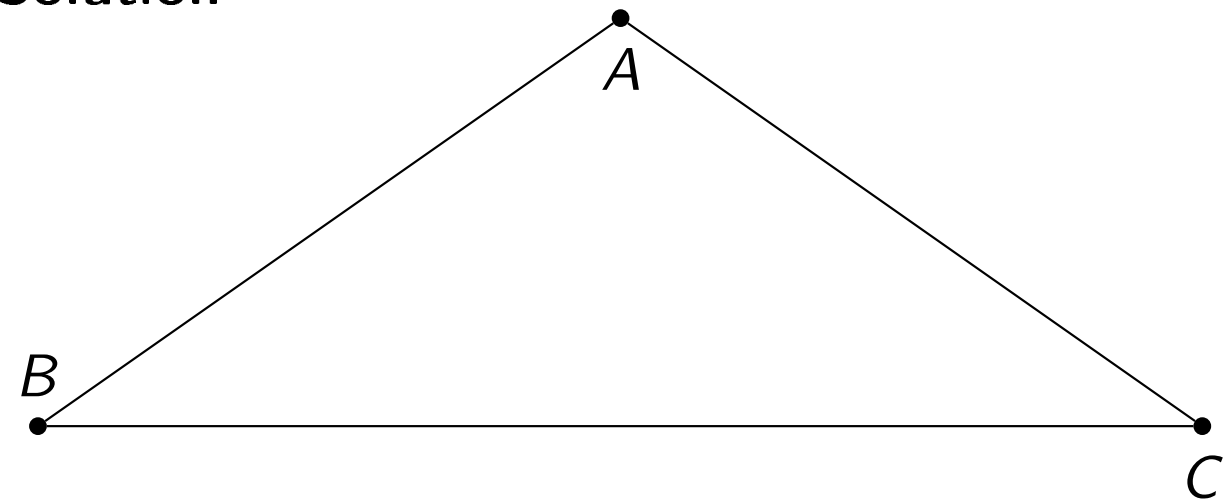


- https://github.com/pratibha444/GEOMETRY/blob/master/CODES/circle/circon.py
- https://github.com/pratibha444/GEOMETRY/blob/master/figs/TRICON.tex

Triangle construction

3. Construct an isosceles triangle in which the lengths of the equal sides is 6.5 and the angle between them is 110°

- **Solution**



- BC = 6.5
- AB = 6.5
- $\angle B = 110$

- https://github.com/pratibha444/GEOMETRY/blob/master/figs/tri_iso.tex
- https://github.com/pratibha444/GEOMETRY/blob/master/CODES/triangle/TRI_CON.py