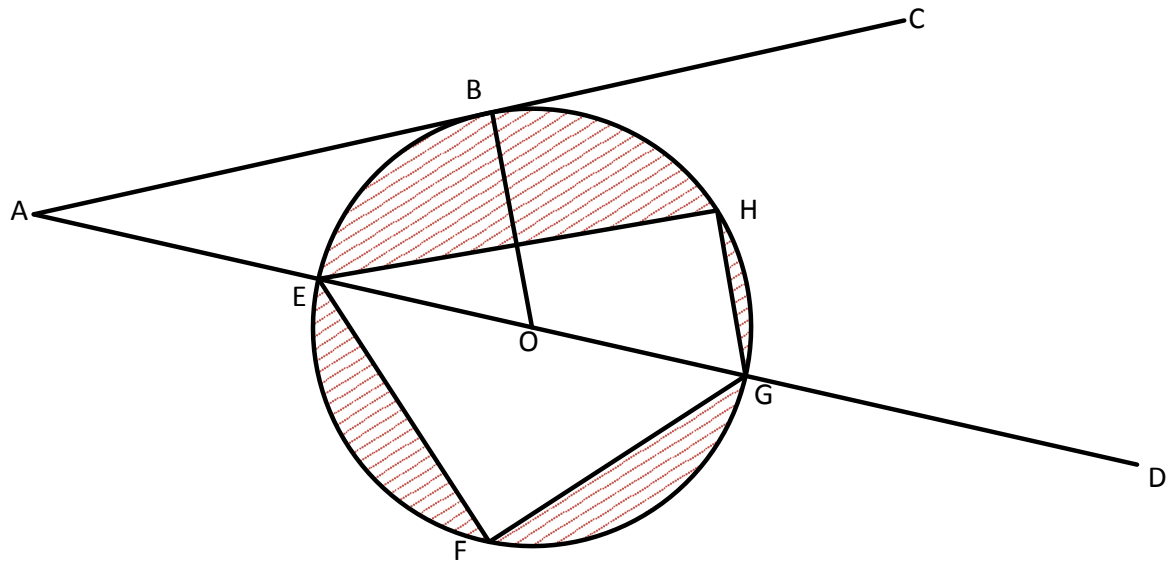


**Difficult Question**



DO NOT SCALE

A is a point of intersection between two line segments. The co-ordinates of A are at  $(-7,12)$ . B is the midpoint on line segment AC. AC is a tangent to a circle.

Lines OB and GH are parallel.

Triangle EFG is an isosceles triangle.

AOD is a line segment where D is located at point  $(28,-5)$ . Point O is the centre of a circle whose radius is OB and whose diameter is EOG. The ratio AO:OD is 7:19.

EFGH form a cyclic quadrilateral which is not symmetrical.

Calculate:

1. the area of triangle AOB;
2. the area of cyclic quadrilateral EFGH;
3. the area of the shaded region of the circle.