half-circle with radius 2 m

B

A

C

2 m

water at 20 deg. Celsius

For the shown half-cylindrical gate, ABC, of radius of 2 meters and width of 5 meters determine (consider water at 20° Celsius):

- the vertical force acting on the gate (magnitude, direction, and line of action) (15 points)
- the horizontal force acting on the gate (magnitude ONLY) (5 points)