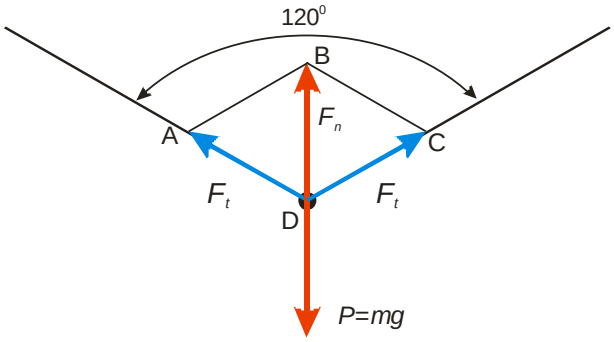
Question #29906

a 100kg weight is suspennded from the center of a rope.. In equilibrium the two halves of the rope subtened an angle of 120 degrees with eachother .Find the tension in the rope

Solution:



According to the third Newton's law the net force Fn is equal to the weight mg.

The net force Fn is the vector sum of two tension forces Ft.

From triangle ABD:

As angle ABD is equal to angle ADB and equal to 60 degree the triangle ABD is the right triangle, according to this:

Ft=Fn=P=mg

Ft=mg=100*9.8=980 N

Answer: the tension in the rope is 980 N.