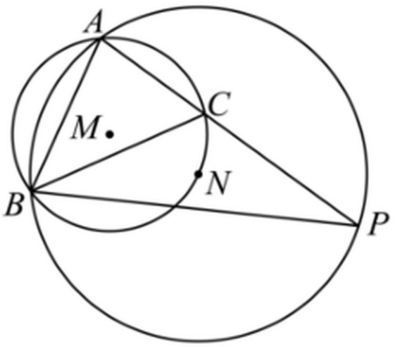
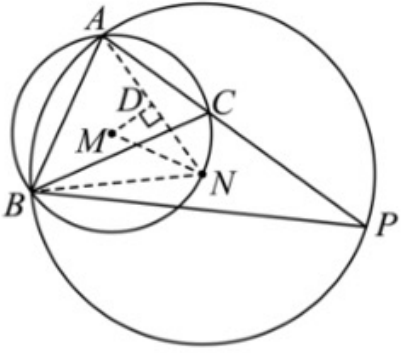
As shown in the figure, Circle M and Circle N both pass through points A and B, and point N is on Circle M. Point C is a point on major arc AE (point C does not coincide with A or B). The extension of AC intersects Circle N at point P. Connect AB, BC, BP. If APB=30 °, AB=3, then the length of MN is?



Input

Connect MN, AN, BN. Draw MD⊥AN from point M to D.



As shown in the figure:
Both circle M and circle N pass through points A and B, APB = 30°, AB = 3, ANB = 2P = 60°,
Also AN = BN, ΔABN is an equilateral triangle, AN = AB = 3, ΔABN is inscribed in circle M, Point M is the circumcenter of the equilateral ΔABN, MN bisects ANB, MD perpendicularly bisects AN, MND = 30°, DN = 1/2 AN = 1.5,
MD ⊥ AN, MDN = 90°, cos MND = DN / MN, MN = DN / cos ∠MND = 1.5 / cos 30° = √3.