- In the triangle ABC, if 'R' is the circum radius then, R = a/2 sin A = b/2 sin B = c/2 sin C = abc/4Δ.
- In case of an in-circle of triangle ABC, if 'r' is the radius of the in-circle, then r = Δ/s

  = (s – a) tan A/2

  = (s – b) tan B/2

  = (s – c) tan C/2

  = [a sin (B/2) sin (C/2)]/ cos A/2

  = [b sin (A/2) sin (C/2)]/ cos B/2

  = [c sin (B/2) sin (A/2)]/ cos C/2

  = 4R sin A/2 sin B/2 sin C/2

- The relation between the radius of in circle and circum circle is given by the inequality 2r ≤ R.
- The above inequality reduces into equality only in case of an equilateral triangle.
- If r1, r2 and r3 are the radii of the escribed circles opposite to the angles A, B and C then,
  1. r1 = Δ/s-a, r2 = Δ/s-b, r3 = Δ/s-c
  2. r1 = s tan A/2, r2 = s tan B/2, r3 = s tan C/2
  3. r1 = [a cos (B/2) cos (C/2)]/ cos A/2
  4. r2 = [b cos (C/2) cos (A/2)]/ cos B/2
  5. r3 = [c cos (A/2) cos (B/2)]/ cos C/2
- Circum-center of the pedal triangle of a given triangle bisects the line joining the circum-center of the triangle to the orthocenter.\
- Orthocenter of a triangle is the same as the in-centre of the pedal triangle in the same triangle.
- If I1, I2 and I3 are the centers of the escribed circles which are opposite to A, B and C respectively and I is the center of the in-circle, then triangle ABC is the pedal triangle of the triangle I1I2I3 and I is the orthocenter of the triangle I1I2I3.
- The centroid of the triangle lies on the line joining the circum center to the orthocenter and divides it in the ratio 1: 2.
- If 'O' is the orthocenter and DEF is the pedal triangle of ΔABC, where AD, BE and CF are the perpendiculars drawn from A, B and C to the opposite sides, then
  1. OA = 2R cos A
  2. OB = 2R cos B
  3. OC = 2R cos C
  4. The circum radius of the pedal triangle = R/2
  5. The area of the pedal triangle is = 2Δ cos A cos B cos C
- Some Important Results:
  1. tan A/2 tan B/2 = (s-c)/s
  2. tan A/2 + tan B/2 = c/s cot C/2 = c(s-c)/Δ

3. tan A/2 - tan B/2 = (a-b)(s-c)/Δ
4. cot A/2 + cot B/2 = (tan A/2 + tan B/2)/ (tan A/2.tan B/2)

1. = c/(s-c) cot C/2