[STRAIGHT OBJECTIVE TYPE]

1. In an equilateral triangle, $R : r : r_2$ is equal to

(A) 1 : 1 : 1 (B) 1 : 2 : 3 (C) 2 : 1 : 3 (D) 3 : 2 : 4

2. If in a ΔABC, $a^2 + b^2 + c^2 = 8R^2$, where R = circumradius, then the triangle is

(A) equilateral (B) isosceles (C) right angled (D) none of these

3. If in equilateral triangle, in-radius is a rational number, then which of the following is not true ?

(A) circum radius is always rational (B) area is always irrational

(C) ex-radii are always rational (D) perimeter is always rational

4. In a triangle ABC, a : b : c = 4 : 5 : 6. The ratio of the radius of the circumcircle to that of the incircle is -

(A) 15/4 (B) 11/5 (C) 16/7 (D) 16/3

5. If the lengths of the sides of a triangle are 3, 4 and 5 units then R the circum radius is -

(A) 2.0 (B) 2.5 (C) 3.0 (D) 3.5

6. If the sides of a triangle are 3 : 7 : 8 then R : r =

(A) 2 : 7 (B) 7 : 2 (C) 3 : 7 (D) 7 : 3

7. In a triangle ABC, $\frac{a\cos A + b\cos B + c\cos C}{a+b+c}$ is equal to -

(A) $\frac{r}{R}$ (B) $\frac{R}{r}$ (C) $\frac{2r}{R}$ (D) $\frac{R}{2r}$

8. If r_1, r_2, r_3 in a triangle be in H.P. then the sides are in -

(A) A.P. (B) G.P. (C) H.P. (D) None of these

9. $\left(\frac{1}{r_1}+\frac{1}{r_2}\right)\left(\frac{1}{r_2}+\frac{1}{r_3}\right)\left(\frac{1}{r_3}+\frac{1}{r_1}\right) =$

(A) $\frac{64R^3}{abc}$ (B) $\frac{R^3}{4abc}$ (C) $\frac{64R^3}{a^2b^2c^2}$ (D) $\frac{R^3}{abc}$

10. If the sides be a, b, c then $\frac{b-c}{r_1} + \frac{c-a}{r_2} + \frac{a-b}{r_3} =$

(A) 5 (B) 4 (C) 0 (D) 1

11. $r_2 r_3 + r_3 r_1 + r_1 r_2 =$

(A) s^2 (B) Δ^2 (C) Δ/r^3 (D) R^2

[LINKED COMPREHENSION TYPE]

Paragraph for Question 12 to 14

Three sides a,b,c of ΔABC are in increasing A.P. and are the roots of the equation $x^3 - 12x^2 + px + q = 0$ where p,q, $\in$ R and a & c are prime numbers.

On the basis of above information, answer the following questions :

12. The value of tanA + sin2B + cos 3C is -

(A) $\frac{172}{75}$ (B) $\frac{171}{100}$ (C) $\frac{161}{100}$ (D) $\frac{171}{75}$

13. The ratio of the radius of circumcircle and radius of incircle of ΔABC is -

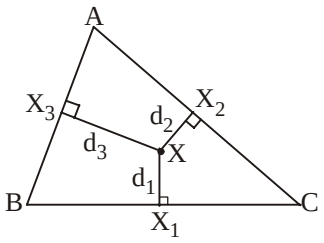
(A) $\frac{5}{2}$ (B) 2 (C) $\frac{3}{2}$ (D) Data insufficient

14. The number of solutions of the equation a sinx + b cosx = c in $[-2\pi,\pi]$ are -

(A) 0 (B) 1 (C) 2 (D) 3

Paragraph for question nos. 15 to 17

In Δ ABC as shown, $XX_1 = d_1$; $XX_2 = d_2$; $XX_3 = d_3$ and X is the centre of the circumscribed circle around the ΔABC. a, b and c as usual are the sides BC, CA and AB respectively.



15. If $\lambda\left(\frac{a}{d_1}+\frac{b}{d_2}+\frac{c}{d_3}\right) = \frac{abc}{d_1d_2d_3}$, then the value of 'λ' is equal to

(A) 1 (B) 2 (C) 4 (D) 8

16. If R is the radius of the circumcircle of the ΔABC and $a(d_2 + d_3) + b(d_3 + d_1) + c(d_1 + d_2) = kR(a + b + c)$ then the value of 'k' is

(A) 1 (B) 1/2 (C) 1/3 (D) 2

17. Let h_a, h_b and h_c are the altitudes of the ΔABC from the angular points A, B and C respectively. If $(a^2 + b^2 + c^2) = t\,(h_ad_1 + h_bd_2 + h_cd_3)$ then 't' equals

(A) 1 (B) 2 (C) 3 (D) 4

[SUBJECTIVE TYPE]

18. In an equilateral ΔABC with each side of $\sqrt{3}$, with usual conventions, the value of $(r_1 - r)(r_2 - r)(r_3 - r)$ is equal to

19. In an acute angled ΔABC, with usual conventions, the arithmetic mean of $\frac{1}{r_1}, \frac{1}{r_2}, \frac{1}{r_3}$ is k, then minimum value of $\sqrt{\frac{6abc\,k}{\Delta}}$ is

20. If r_1, r_2, r_3 are roots of $x^3 - 6x^2 + 11x - 6 = 0$ then the area of the triangle is $\frac{p}{\sqrt{q}}$, where p & q are coprimes then (q – p) is equal to

Answers

RACE # 39

1.	(C)	**2.**	(C)	**3.**	(D)	**4.**	(C)	**5.**	(B)	**6.**	(B)	**7.**	(A)	**8.**	(A)	**9.**	(C)	**10.**	(C)
11.	(A)	**12.**	(B)	**13.**	(A)	**14.**	(C)	**15.**	(C)	**16.**	(A)	**17.**	(D)	**18.**	1	**19.**	4	**20.**	5