10 Properties of Triangle

1. In a ΔABC, $A = 30$ $b = 8$, $a = 6$ then $B = \sin^{-1}x$ then find x.

(A) $\frac{1}{2}$ (B) $\frac{1}{3}$

(C) $\frac{2}{3}$ (D) 1

2. If in ΔABC

$\frac{2\cos A}{a} + \frac{\cos B}{b} + \frac{2\cos C}{c} = \frac{a}{bc} + \frac{b}{ac}$ then

(A) $\angle A = 90$ (B) $\angle B = 90$

(C) $\angle C = 90$ (D) None of these

3. In any ΔABC, then value of $\frac{\cos A}{a} + \frac{\cos B}{b} + \frac{\cos C}{c}$ and $c\,(b\cos A - a\cos B)$.

(A) $\frac{a^2+b^2+c^2}{abc}, a^2 - b^2$

(B) $\frac{a^2+b^2+c^2}{2abc}, b^2 - a^2$

(C) $\frac{a^2+b^2+c^2}{2}, a^2 + b^2$

(D) None of these

4. If k is perimeter of ΔABC then the value of $b\cos^2\frac{c}{2} + c\cos^2\frac{B}{2}$

(A) $2k$ (B) $\frac{k}{2}$

(C) $\frac{3k}{2}$ (D) k

5. In any ΔABC, the value of $(b + c)\cos A(c + a)\cos B(a + b)\cos c$ and $(b - a\cos c)\tan A$

(A) abc, $b\sin A$ (B) $a + b - c$, $\sin B$

(C) $a - b - c$, $\sin C$ (D) $a + b + c$, $a\sin c$

6. In ΔABC, $a = 2b$, $|A - B| = \frac{\pi}{3}$ then the value of $\angle C$ is

(A) $\frac{\pi}{6}$ (B) $\frac{\pi}{3}$

(C) $\frac{\pi}{4}$ (D) $\frac{\pi}{2}$

7. If the sides of ab ABC satisfy $3a = b + c$ then the value of $\cot + \frac{B}{2}\cot\frac{C}{2}\cot\frac{C}{2}$ is

(A) 1 (B) 2

(C) 3 (D) 4

8. Given that $b = 2$, $c = \sqrt{3}$ $\angle A = 30$ then the radius of incircle of Δ.

(A) $\frac{1-\sqrt{3}}{2}$ (B) $\sqrt{3}$

(C) $\frac{\sqrt{3}-1}{2}$ (D) $\frac{\sqrt{3}}{2}$

9. In any ΔABC, the value of $R\,r(\sin A + \sin B + \sin C)$

(A) Δ (B) $\frac{\Delta}{2}$

(C) 2Δ (D) 4Δ

10. If in a ΔABC, the value of cot A, cot B, and cot C are in A.P then a^2, b^2 and c^2 are in

(A) GP (B) HP

(C) AP (D) None of these

11. If in ΔABC, $\sin^3 A + \sin^3 B + \sin^3 C = 3\sin A \sin B \sin C$ then the value of $\begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix}$ is

(A) -1 (B) 1

(C) $\frac{1}{2}$ (D) 0

12. In a ΔABC, $(5 - a)(5 - b) = 5(5 - c)$ then $\angle C$ is equal to
(A) 90° (B) 45°
(C) 30° (D) 0°

13. In a ΔABC, if $2s = a + b + c$ and $(s - b)(s - c) = x \sin^2\frac{A}{2}$
(A) bc (B) ca
(C) ab (D) abc

14. If the angles of a ΔABC be in AP, then
(A) $c^2 = a^2 + b^2 - ab$ (B) $b^2 = a^2 + c^2 - ac$
(C) $a^2 = b^2 + c^2 - ac$ (D) $b^2 = a^2 + c^2$

15. In ΔABC, $\frac{b+c}{a}$ is equal to
(A) $\frac{\cos\left(\frac{B-C}{2}\right)}{\sin\frac{A}{2}}$ (B) $\frac{\sin\frac{B-C}{2}}{\cos\frac{A}{2}}$
(C) $\frac{\cos\frac{B+C}{2}}{\cos\frac{A}{2}}$ (D) $\frac{\cos\frac{B+C}{2}}{\cos\frac{A}{2}}$

16. In ΔABC, $(a + c)\cos A + (c + a)\cos B + (a + b)\cos c$ is equal to
(A) 0 (B) 1
(C) $a + b + c$ (D) $2(a + b + c)$

17. In ΔABC, if $\frac{\cos A}{a} = \frac{\cos B}{b} = \frac{\cos C}{c}$ then the Δ is
(A) right $\angle D$ (B) obtuse angle
(C) equilateral (D) isosceles

18. In a ΔABC, $2\left(a\sin^2\frac{c}{2} + c\sin^2\frac{A}{2}\right)$ is equal to
(A) $a + b - c$ (B) $c + a - b$
(C) $b + c - a$ (D) $a + b + c$

19. In a ΔABC, if $a = 2x$, $b = 2y$ and $\angle c = 120°$ then the area of
(A) xy (B) $xy\sqrt{3}$
(C) $3xy$ (D) $2xy$

20. In Δa ΔABC, if $\tan\frac{A}{2}\tan\frac{C}{2} = \frac{1}{2}$ the a, b, c are in
(A) AP (B) GP
(C) HP (D) None of these