MATHS

BOOKS - CHHAYA PUBLICATION MATHS (BENGALI ENGLISH)

PROPERTIES OF TRIANGLE

Illustrative Examples

1. If the angles of a triangle are in the ratio $1:2:3$ and the circumradius is 10 cm, find the lengths of its sides.

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2. In the triangle ABC, if a=5, b=7 and c=3, find the angle B and the circumradius R.

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3. If the radius ABC, $C = \frac{\pi}{6}, b = \sqrt{3}$ and a=1, find the other angles and the third side.

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4. (i) If $a : b : c = 2 : 3 : 4$ and s=27 inches, find the area of the triangle ABC.

(ii) If in a triangle ABC, a=6, b=3 and cos(A-B) $= \frac{4}{5}$ then find its area.

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5. The triangle ABC is isosceles: If $\angle A = 108^\circ$, find the value of a:b.

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6. In the triangle ABC, if A $= 60^\circ$, show that, $b + c = 2a \cos\left[\frac{B - C}{2}\right]$

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7. In any triangle ABC, prove that, $c\sin\left(\frac{A-B}{2}\right) = (a-b)\cos\left(\frac{C}{2}\right)$

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8. In any triangle ABC, prove that, $(b^2-c^2)\cot A + (c^2-a^2)\cot B + (a^2-b^2)\cot C = 0$

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9. In any triangle ABC, prove that $\frac{a^2\sin(B-C)}{\sin B+\sin C} + \frac{b^2\sin(C-A)}{\sin C+\sin A} + \frac{c^2\sin(A-B)}{\sin A+\sin B} = 0$

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10. In any triangle ABC, prove that,

$$(b-c)\cot'\frac{A}{2}' + (c-a)\cot'\frac{B}{2}' + (a-b)\cot'\frac{C}{2}' = 0$$

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11. In any triangle ABC, show that,

$$(a+b-c)\left(\frac{\cot A}{2} + \frac{\cot B}{2}\right) = 2c\frac{\cot C}{2}$$

A. page no 460

B.

C.

D.

Answer:

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12. If the area of the triangle ABC be $\triangle$, show that, $b^2 \sin 2C + c^2 \sin 2B = 4 \triangle$.

A. page no 460

B.

C.

D.

Answer:

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13. The sides of a triangle in cm are 2a + 3, $a^2 + 3a + 3$ and $a^2 + 2a$, where a is a given positive quantity. Find the greatest angle of the triangle.

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14. If $(a^2+b^2)\sin(A-B)=(a^2-b^2)\sin(A+B)$ then show that, the triangle is either isoscelels or right angled.

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15. In any triangle ABC, prove that,

$a^3\cos(B-C)+b^3\cos(C-A)+c^3\cos(A-B)=3abc.$

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16. (i) If in a triangle ABC, $a^4+b^4+c^4-2b^2c^2-2c^2a^2=0$, then show that, $C=45^\circ$ or 135°.

(ii) In in a triangle ABC,

$\sin^4 A+\sin^4 B+\sin^4 C=\sin^2 B\sin^2 C+2\sin^2 C\sin^2 A+2\sin^2 A\sin^2 B$

, show that, one of the angles of the triangle is 30° or 150°

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17. If C is a right angle in the triangle ABC, show that, $\tan^{-1}\left(\frac{a}{b+c}\right) + \tan^{-1}\left(\frac{b}{c+a}\right) = \frac{\pi}{4}$.

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18. If in any triangle ABC, $\cot A + \cot B + \cot C = \sqrt{3}$, prove that, the triangle is equilateral.

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19. In triangle ABC ,$A = 90^\circ$, $B = 45^\circ$ and $a = 5$, then find b?

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20. In any triangle ABC, if $8R^2 = a^2 + b^2 + c^2$, prove that, the triangle is right angled.

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21. If the sides of a triangle are in A.P. and the greater and the least angles are θ and ϕ respectively, then show that, $4(1-\cos\theta)(1-\cos\phi)=\cos\theta+\cos\phi$

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22. (i) If the cosines of two of the angles of a triangle, which is not isosceles, are iversely proportional to the corresponding opposite sides, show that the triangle is right angled.

(ii) In a triangle ABC, If A=2B then show that, $a^2-b^2=bc.$

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23. In triangle ABC ,$A=60^\circ$, $B=45^\circ$ and $a=2\sqrt{3}$, then find b?

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24. If the lengths of the sides $\overrightarrow{BC}, \overrightarrow{CA}$ and $\overrightarrow{AB}$ of the triangle ABC be a:b:c respectively and the lengths of perpendicular from the circumcenter upon $\overrightarrow{BC}, \overrightarrow{CA}$ and $\overrightarrow{AB}$ be x, y, z respectively, then prove that,

$$\frac{a}{x}+\frac{b}{y}+\frac{c}{z}=\frac{abc}{4xyz}.$$

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25. The perpendicular from the vertices A, B and C of a triangle ABC on the opposite sides meet at O. If OA=x, OB=y and OC=z, prove that,

$$\frac{a}{x}+\frac{b}{y}+\frac{c}{z}=\frac{abc}{xyz}.$$

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26. Two chords of a circle are of lengths a cm and b cm and they subtend angles θ and 3θ respectively at the center of the circl. If the radius of the circle by r cm, show that,

$$r=a\sqrt{\frac{a}{3a-b}}\text{ cm.}$$

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27. In any triangle ABC, if $\frac{\cos B + 2\cos A}{\cos B + 2\cos C} = \frac{\sin C}{\sin A}$ then prove that, the triangle is either isosceles or right angled.

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28. In any triangle ABC if $\cos A + 2\cos B + \cos C = 2$, show that the sides of the triangle are in A.P.

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29. In any triangle ABC, prove that

$$\frac{\sin A}{\sin B + \sin C} + \frac{\sin B}{\sin C + \sin A} + \frac{\sin C}{\sin A + \sin B} \geq \frac{3}{2}.$$

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30. In any triangle ABC, If $b^2 = a(c+a), c^2 = b(a+b)$, then prove that, cosAcosB cosC $= -\frac{1}{8}$.

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31. If in a triangle ABC, $\cos^2 A + \cos^2 B + \cos^2 C = 1$, then show that the triangle is right angled.

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32. In the triangle ABC, If $\text{cosec}^2 A + \text{cosec}^2 B + \text{cosec}^2 C = 4$, show that the triangle is equilateral.

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Exercise Multiple Choice Questions

1. In an triangle, ABC, if $A = 60^\circ$, $B = 45^\circ$ and $a = 2\sqrt{3}$ units then, b=

A. $2\sqrt{2}$ units

B. $3\sqrt{2}$ units

C. 1 unit

D. none of these

Answer: A

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2. If the sides of triangle be 15 units , 12 units and 9 units then the area (in sq. units) of the triangle is-

A. 45

B. 54

C. 50

D. 40

Answer: B

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3. If $\sin^2 B + \sin^2 C = \sin^2 A$, then the triangle ABC is-

A. isosceles

B. right angled

C. equilateral

D. none of these

Answer: B

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4. If $a = \sqrt{3}$, $b = 2$ and c=1, then the value of angle A is

A. 30°

B. 45°

C. 60°

D. 90°

Answer: C

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5. In any triangle ABC, which of the following is false?

A. a=b cos C - c cos B

B. $\sin A + \sin B > \sin C$

C. $b^2 = c^2 + a^2 - 2ca \cos B$

D. The formula $a^2 = b^2 - 2bc \cos A$ can be deduced using the formula of the form $a = b \cos C + c \cos B$

Answer: A

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6. In triangle ABC, state which of the following is the value of (bc cosA + ca cosB)?

A. a^2

B. b^2

C. c^2

D. $a^2 + b^2$

Answer: C

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7. In triangle ABC, If $B = 90^\circ$, state which of the following is true?

A. $(a - b)^2 = c^2 - ab$

B. $(b - c)^2 = a^2 - bc$

C. $(c - a)^2 = b^2 - ca$

D. $(c-a)^2 = b^2 - 2ca$

Answer: D

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8. In triangle ABC, If cos B=$\frac{a}{2c}$, then the triangle is-

A. equilateral

B. isosceles

C. right angled

D. scalene.

Answer: B

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9. The circumradius of triangle ABC is 10 units: If $c = 10\sqrt{3}$ units, state which of the following is the value of the angle C?

A. 60°

B. 120°

C. 30°

D. 90°

Answer: A

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10. In triangle ABC, if (a+b+c)(b+c-a) = 3bc, state which of the following is the value of the angle A?

A. 30°

B. 60°

C. 90°

D. 120°

Answer: B

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11. In triangle ABC, if a=3, b=5 and $c = 120^\circ$, state which of the following is the value of c?

A. 7

B. 6

C. 6.5

D. 7.5

Answer: A

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12. If in a $\triangle ABC, \angle A = 45^\circ, \angle B = 60^\circ, \angle C = 75^\circ$, then the ratio of its sides is-

A. $2 : \sqrt{6} : \sqrt{3} + 1$

B. $\sqrt{6} : 2 : \sqrt{3} + 1$

C. $\sqrt{6} : \sqrt{3} + 1 : 2$

D. none of these

Answer: A

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13. In a triangle, a=2b and A=3B. Mention which of the following is true?

A. The triangle is equilateral

B. The triangle is isosceles

C. The triangle is right angled

D. The existence of such a triangle is not possible.

Answer: C

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Very Short Answer Type Questions

1. In a triangle the sides are in the ratio $\sqrt{2}:2:\left(\sqrt{3}+1\right)$. Find the possible values of the angles.

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2. If the angles of a triangle are in the ratio $2:3:7$ and the circumradius is 10 cm, find the lenghts of its sides.

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3. In $\triangle ABC\angle B=60^{\circ}, c=2\sqrt{3}, b=3\sqrt{2}$ then find $\angle A$.

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4. In a triangle ABC the angle $A = 60^\circ$ and $b : c = \left(\sqrt{3} + 1\right) : 2$. Find the other two angles B and C.

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5. If the two sides and the included angle are respectively $a = \sqrt{3} + 1, b = 2, \angle C = 60^\circ$, find the other angles and the third side.

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6. Find the angles of the triangle whose sides are $\frac{\sqrt{3}+1}{2\sqrt{2}}, \frac{\sqrt{3}-1}{2\sqrt{2}}$ and $\frac{\sqrt{3}}{2}$.

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7. Find the area of the triangle if

(i) $a = 13, b = 14, c = 15$

(ii) $a : b : c = 3 : 4 : 5$ and s=48 cm

(iii) $a = \frac{x}{y} + \frac{y}{z}, b = \frac{y}{z} + \frac{z}{x}$ and $c = \frac{z}{x} + \frac{x}{y}$

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8. If in a triangle ABC, a=3, b=5 and c=7, show that the triangle is obtuse angled.

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9. If $\frac{\sin A}{3} = \frac{\sin B}{3} = \frac{\sin C}{4}$, then prove that, $\cos C = \frac{1}{9}$.

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10. If in a triangle ABC, $\frac{a-b+c}{2} = a\frac{b}{b+c-a}$ then prove that $\angle C = 90^\circ$.

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11. If a=3, b=4, c=5, find the value of $\tan\left(\frac{B}{2}\right)$.

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12. If a=2b and A=3B, find the angles of the triangle ABC.

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13. (i) $(b+c)\cos A + (c+a)\cos B + (a+b)\cos C = a+b+c$

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14. (ii) $(b-c)\sin A+(c-a)\sin B+(a-b)\sin C=0$

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15. (iii) $a(b\cos C-c\cos B)=b^2-c^2$

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16. (iv)

$$a^2\left(\cos^2 B-\cos^2 C\right)+b^2\left(\cos^2 C-\cos^2 A\right)+c^2\left(\cos^2 A-\cos^2 B\right)=0$$

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17. (v) $2(bc\cos A+ca\cos B+ab\cos C)=a^2+b^2+c^2$

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18. (vi) $(a^2 - b^2 - c^2)\tan A + (a^2 - b^2 + c^2)\tan B = 0$

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19. (vii) $(b^2 + c^2 - a^2)\tan A = (a^2 - b^2 + c^2)\tan B$

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20. (viii)

$$(b + c - a)\tan\left(\frac{A}{2}\right) = (c + a - b)\tan\left(\frac{B}{2}\right) = (a + b - c)\frac{\tan C}{2}$$

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Short Answer Type Questions

1. In triangle ABC,

(i) $a\sin\left(\frac{A}{2} + B\right) = (b + c)\frac{\sin A}{2}$

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2. (ii) $(b-c)\cos\left(\frac{A}{2}\right) = a\sin\left(\frac{B-C}{2}\right)$

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3. (iii) $a\cos A + b\cos B + c\cos C = 4R\sin A\sin B\sin C$

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4. (iv) $a\sin(B-C) + b\sin(C-A) + c\sin(A-B) = 0$

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5. (v) $\frac{b^2-c^2}{\cos B+\cos C} + \frac{c^2-a^2}{\cos C+\cos A} + \frac{a^2-b^2}{\cos A+\cos B} = 0$

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6. (vi) $a\cos B\cos C + b\cos C\cos A + c\cos A\cos B = \dfrac{abc}{4R^2}$

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7. (vii) $\left(b^2 - c^2\right)\cos 2A + \left(c^2 - a^2\right)\cos 2B + \left(a^2 - b^2\right)\cos 2C = 0$

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8. (viii) $\left(b^2 - c^2\right)\cos 2A + \left(c^2 - a^2\right)\cos 2B + \left(a^2 - b^2\right)\cos 2C = 0$

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9. (ix) $\dfrac{a^2\sin(B-C)}{\sin A} + \dfrac{b^2\sin(C-A)}{\sin B} + \dfrac{c^2\sin(A-B)}{\sin C} = 0$

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10. (x) $\dfrac{a\sin(B-C)}{b^2 - c^2} = \dfrac{b\sin(C-A)}{c^2 - a^2} = \dfrac{c\sin(A-B)}{a^2 - b^2}$

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11. (xi) $a^2 \sin 2B + b^2 \sin 2A = 4\Delta$

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12. (xii) $(b + c - a)\left(\cot' \frac{B}{2}' + \cot' \frac{C}{2}'\right) = 2a \cot' \frac{A}{2}$

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13. (xiii) $a^3 \sin(B - C) + b^3 \sin(C - A) + c^3 \sin(A - B) = 0$

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14. (xiv) $a \cos A + b \cos B + c \cos C = \frac{abc}{2R^2}$

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15. (xv) $a\cos(B-C)+b\cos(C-A)+c\cos(A-B)=\frac{4(\Delta)}{R}$

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16. If $C=60^\circ$, show that, $2a-b=2c\cos B$

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17. If $b+c=2a$, show that, $2\sin'\frac{A}{2}'=\sin\left(B+\frac{A}{2}\right)$

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18. If $a\cos^2'\frac{C}{2}'+c\cos^2'\frac{A}{2}'=\frac{3b}{2}$ then show that the sides of the triangle are in A.P.

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19. In any triangle ABC, if $\frac{1}{a+c}+\frac{1}{b+c}=\frac{3}{a+b+c}$ then show that, $C=60^{\circ}$.

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20. If $2\cos A=\frac{\sin B}{\sin C}$ then show that the triangle is isosceles.

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21. In triangle ABC ,$a=2, b=\sqrt{3}$ and $A=90^{\circ}$, then find B?

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22. In any triangle ABC, if cosA cos B + sin A sin B sinC =1 then prove that the triangle in an isosceles right angled.

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23. In any triangle ABC, prove that

$$\cos A + \cos B + \cos C \leq \frac{3}{2}$$

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24. In any triangle ABC, show that $\frac{a \sin C}{b - a \cos C} = \tan A.$

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25. If $B = 30^\circ$, $b = 3\sqrt{2} - \sqrt{6}$, $c = 6 - 2\sqrt{3}$, solve the triangle.

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26. In any triangle ABC, if cosA + cos B + cosC $= \frac{3}{2}$, then show that the triangle is equilateral.

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27. If A,B,C be the angles ofa triangle then prove that $(\sin A + \sin B)(\sin B + \sin C)(\sin C + \sin A) > \sin A \sin B \sin C$.

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28. In any triangle ABC, if $\sin^2 A + \sin^2 B + \sin^2 C = \frac{9}{4}$, show that the triangle is equilateral.

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Long Answer Type Questions

1. The sides of a triangle ABC are $(x^2 + x + 1)$, $(2x + 1)$ and $(x^2 - 1)$. Find the greatest angle of the triangle.

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2. In a triangle ABC, if $(a^2+b^2)\sin(A-B)=(a^2-b^2)\sin(A+B)$ (where $a \neq b$), prove that the triangle is right angled.

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3. If $a^4+b^4+c^4+a^2b^2=2c^2(a^2+b^2)$ then show that, $C=60^\circ$ or 120°

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4. A wire of length 2 metre is cut into three pieces so as to form the sides of a triangle. If the two angles of the triangle be 35° and 85°, find an metre the lengths of the sides. Given $\sin 35^\circ = 0.5736$, $\sin 60^\circ = 0.8660$ and $\sin 85^\circ = 0.9962$.

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5. The angles A, B, C of $\triangle ABC$ are in A.P. and $b: c = \sqrt{3}: \sqrt{2}$. Find A.

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6. If in $\triangle ABC, \tan^{-1}\left(\frac{a}{b+c}\right) + \tan^{-1}\left(\frac{c}{a+b}\right) = \frac{\pi}{4}$, then prove that, the triangle is right angled.

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7. If $\frac{\sin A}{\sin C} = \frac{\sin(A-B)}{\sin(B-C)}$, then show that, a^2, b^2, c^2 are in A.P.

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8. In triangle ABC ,$a = 3, b = 3\sqrt{3}$ and $A = 30^\circ$, then find B?

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9. In any triangle ABC, if sin A : sin B: sin C= 4:5:6, then prove that, cosA : cosB : cosC = 12:9:2

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10. In any triangle ABC, if $\tan\left(\frac{A}{2}\right), \tan\left(\frac{B}{2}\right), \tan\left(\frac{C}{2}\right)$ are in A.P., prove that, cosA, cosB, cosC are also in A.P.

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11. If h be the length of the perpendicular drawn from A on BC in the triangle ABC, show that, $h = \frac{a \sin B \sin C}{\sin(B+C)}$.

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12. If D is the mid-pointof the side BC of a triangle ABC and $\angle BAD = \theta, \angle CAD = \phi$, then show that $\cot\theta - \cot\phi = \cot B - \cot C$

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13. The sides of a triangle are 4,5,6 cm. Show that its smallest angle is half of its greatest angle.

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14. ABC is a triangle and D is the middle point of BC. If AD is perpendicular to AC, prove that, cosA cos C $= \left(2\frac{c^2 - a^2}{3ca}\right)$

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15. In any triangle ABC, if $\frac{\cos A + 2\cos C}{\cos A + 2\cos B} = \frac{\sin B}{\sin C}$ then prove that, the triangle is either isosceles or right angled.

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16. If x,y,z are altitudes of the triangle ABC, through the vertices A,B, C respectively, then prove that, $\frac{\cos A}{x}+\frac{\cos B}{y}+\frac{\cos C}{z}=\frac{1}{R}$ where R is the circumradius of the triangle.

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17. In any triangle PQR, $\angle R=\frac{\pi}{2}$. If $\tan'\frac{P}{2}$ and $\tan'\frac{Q}{2}$ are the roots of the equation $ax^2+bx+c=0(a\neq 0)$, then show that, a+b=c.

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18. In triangle ABC, if $3\left(\tan'\frac{A}{2}'+\tan'\frac{C}{2}'\right)=2\cot'\frac{B}{2}$ then show that, its sides a,b,c are in A.P.

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19. In the triangle ABC if

$\frac{2\cos A}{a}+\frac{\cos B}{b}+\frac{2\cos C}{c}=\frac{a}{bc}+\frac{b}{ca}$ find the angle A.

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20. If in the triangle ABC, $C=\frac{\pi}{2}$ and $\tan'\frac{A}{2}', \tan'\frac{B}{2}$ are two roots of the equation $px^2+qx+r=0(p\neq 0)$ then show that p+q=r.

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21. In the triangle ABC, if $\frac{b+c}{11}=\frac{c+a}{12}=\frac{a+b}{13}$, prove that $\frac{\cos A}{7}=\frac{\cos B}{19}=\frac{\cos C}{25}$.

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22. In the triangle ABC, two sides b,c and angle B are given, side a has two values a_1 and a_2. Show that $|(a_1-a_2)|=2\sqrt{b^2-c^2\sin^2 B}$.

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Sample Questions For Competitive Exams

1. In triangle ABC if $a^4 + b^4 + c^4 = 2a^2b^2 + 2b^2c^2$ then the values of B will be-

A. 45°

B. 135°

C. 120°

D. 60°

Answer: A::B

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2. The sides of a $\triangle ABC$ satisfy the equation $2a^2 + 4b^2 + c^2 = 4ab + 2ac$, then-

A. the triangle is isoceles

B. the triangle is obtuse

C. $B = \frac{\cos^{-1} 7}{8}$

D. $A = \frac{\cos^{-1} 1}{4}$

Answer: A::C::D

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3. If the sides of right angled triangle are in G.P then the cosines of the acute angle of the triangle are-

A. $\frac{\sqrt{5}-1}{2}$

B. $\frac{\sqrt{5}+1}{2}$

C. $\frac{\sqrt{\sqrt{5}-1}}{2}$

D. $\frac{-\left(\sqrt{5}\right)-1}{2}$

Answer: A::C::D

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4. In $\triangle ABC$, if $\cos'\frac{A}{2}' = \sqrt{\frac{b+c}{2c}}$, then-

A. Area of triangle is $\frac{1}{2}ab$

B. Circumradious is equal to $\frac{1}{2}c$

C. Area of triangle is $\frac{1}{2}bc$

D. Circumradius is equal to $\frac{1}{2}a$

Answer: A::B

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5. In a triangle $\sin^4 A + \sin^4 B + \sin^4 C = \sin^2 B \sin^2 C + 2\sin^2 C \sin^2 A + 2\sin^2 A \sin^2 B$, then its angle A is equal to-

A. 30°

B. 120°

C. 150°

D. 60°

Answer: A::C

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Integer Answer Type

1. ABC is a right angled triangle, then the value of $\sin^2 A + \sin^2 B + \sin^2 C$ will be-

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2. In $\triangle ABC$, if 3a = b+c then the value of $\cot' \frac{B}{2}' \cot' \frac{C}{2}$ will be-

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3. A triangle ABC is inscribed in a circle. If half the sum of the square of its three sides is equal to twice the square of the diameter of the circle, then the value of $\sin^2 A + \sin^2 B + \sin^2 C$ will be-

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4. In $\triangle ABC, \angle A = 60, b = \sqrt{3} + 1$ and $c = \sqrt{3} - 1$ then the value of $\tan\left(\frac{B - C}{2}\right)$ is-

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5. In $\triangle ABC$ $\angle A = 60^\circ$, then the value of $\left(1 + \frac{a}{c} + \frac{b}{c}\right)\left(1 + \frac{c}{b} - \frac{a}{b}\right)$ will be-

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Comprehension Type

1. ABC is a triangle where a=6, b=3 and $\cos(A-B)=\frac{4}{5}$

(i) Area of the triangle ABC (in sq. units) is-

A. 9

B. 12

C. 11

D. 10

Answer: A

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2. ABC is a triangle where a=6, b=3 and $\cos(A-B)=\frac{4}{5}$

Value of angle C is-

A. $\frac{3\pi}{4}$

B. $\frac{\pi}{4}$

C. $\frac{\pi}{2}$

D. $\frac{\pi}{3}$

Answer: C

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3. ABC is a triangle where a=6, b=3 and $\cos(A-B)=\frac{4}{5}$

A. $\frac{1}{2\sqrt{5}}$

B. $\frac{1}{\sqrt{3}}$

C. $\frac{1}{\sqrt{5}}$

D. $\frac{2}{\sqrt{5}}$

Answer: D

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4. P_1, P_2, P_3 are altitudes of a triangle ABC from the vertices A, B, C and Δ is the area of the triangle,

The value of $\frac{1}{p_1^2} + \frac{1}{p_2^2} + \frac{1}{p_3^2}$ is equal to-

A. $\frac{a+b+c}{\Delta}$

B. $\frac{a^2+b^2+c^2}{4\Delta^2}$

C. $\frac{a^2+b^2+c^2}{\Delta^2}$

D. none of these

Answer: B

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5. P_1, P_2, P_3 are altitudes of a triangle ABC from the vertices A, B, C and Δ is the area of the triangle,

The value of $P_1^{-1} + P_2^{-1} + P_3^{-1}$ is equal to-

A. $\frac{2S}{\Delta}$

B. $\frac{2}{r}$

C. $\frac{8R}{abc}$

D. none of these

Answer: D

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6. P_1, P_2, P_3 are altitudes of a triangle ABC from the vertices A, B, C and Δ is the area of the triangle,

The value of $\frac{\cos A}{P_1} + \frac{\cos B}{P_2} + \frac{\cos C}{P_3}$ is equal to-

A. $\frac{1}{R}$

B. $\frac{a^2 + b^2 + c^2}{2R}$

C. $\frac{\Delta}{2R}$

D. none of these

Answer: A

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Assertion Reason Type

1. Statement-I: In $\triangle ABC, \sin A + \sin B > \sin C$

Statement-II: In $\triangle ABC$, sum of two sides is always greater than the third side.

A. Statement-I is true, statement-II is true and statement-II is a correct explanation for statement- I.

B. Statement-I is true, Statement-II is true but Statement-II is not a correct explanation of Statement-I.

C. Statement-I is true, Statement-II is false.

D. Statement-I is false, Statement-II is true.

Answer: A

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2. Prove that $(b-c)\sin A+(c-a)\sin B+(a-b)\sin C=0$

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