SOLUTION OF TRIANGLES

DPP by VKR Sir

B.TECH., IIT DELHI

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Class XI **Date : 06- 09- 12** **Batch : P** **Time : 60 Min.** **DPP.No. 37**

1. If cos A + cosB + 2cosC = 2 then the sides of the Δ ABC are in
(A) A.P. (B) G.P (C) H.P. (D) none

2. If in a triangle sin A : sin C = sin (A – B) : sin (B – C) then $a^2 : b^2 : c^2$
(A) are in A.P. (B) are in G.P. (C) are in H.P. (D) none of these

3. In a triangle ABC, a : b : c = 4 : 5 : 6 . Then 3A + B =
(A) 4C (B) 2π (C) $\pi - C$ (D) π

4. In a triangle ABC the relation $\frac{a}{13} = \frac{b}{7} = \frac{c}{15}$ holds good. Which of the following option(s) is/are correct ?
(A) The triangle is acute (B) The triangle is obtuse
(C) tan C = 5 (D) The angles A, B, C (in some order) are in A.P.

5. The sides of a Δ ABC satisfy the equation, $2a^2 + 4b^2 + c^2 = 4ab + 2ac$. Then
(A) the triangle is isosceles. (B) the triangle is obtuse.
(C) $B = \cos^{-1}\frac{7}{8}$ (D) $A = \cos^{-1}\frac{1}{4}$

6. With usual notation in a Δ ABC, $b^2 \sin 2C + c^2 \sin 2B$ equals
(A) $\frac{abc}{R}$ (B) $\frac{2abc}{R}$ (C) $\frac{abc}{2R}$ (D) 2 bc sinA

7. Let ABC be a triangle such that $\angle ACB = \frac{\pi}{6}$ and let a,b and c denote the lengths of the sides opposite to A, B and C respectively. The value(s) of x for which $a = x^2 + x + 1$, $b = x^2 - 1$ and $c = 2x + 1$ is (are)
(A) $-(2+\sqrt{3})$ (B) $1+\sqrt{3}$ (C) $2+\sqrt{3}$ (D) $4\sqrt{3}$

8. If a, b, c are the sides of a triangle ABC then $\sqrt{a} + \sqrt{b} - \sqrt{c}$ is always
(A) negative (B) positive (C) non-negative (D) non-positive

9. If sides of triangle ABC are a, b and c such that 2b = a + c then exhaustive range of $\frac{b}{c}$ is
(A) $\left(\frac{1}{3},\frac{2}{3}\right)$ (B) $\left(\frac{1}{3},2\right)$ (C) $\left(\frac{2}{3},2\right)$ (D) $\left(\frac{3}{2},2\right)$

10. If the angles A, B and C of a triangle are in an arithmetic progression and if a,b and c denote the lengths of the sides opposite to A, B and C respectively, then the value of the expresion $\frac{a}{c}\sin 2C + \frac{c}{a}\sin 2A$ is
(A) $\frac{1}{2}$ (B) $\frac{\sqrt{3}}{2}$ (C) 1 (D) $\sqrt{3}$

11. In a triangle ABC if $\sin A = \sin^2 B$ and $2\cos^2 A = 3\cos^2 B$ then prove that the triangle is obtuse angled.

12. Prove that a triangle ABC is possible satisfying $(a + b)^2 = c^2 + ab$ and $\sin A + \sin B + \sin C = 1 + \frac{\sqrt{3}}{2}$.

ANSWERS

1. A **2.** A **3.** D **4.** BD **5.** ACD **6.** AD **7.** B **8.** B **9.** C **10.** D

Class XI **Date : 08- 09- 12** **Batch : P** **Time : 60 Min.** **DPP.No. 38**

1. In a Δ ABC if b + c = 3a then $\cot\frac{B}{2}\cdot\cot\frac{C}{2}$ has the value equal to :

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

2. With the usual notation in any ΔABC ,

(A) $\frac{a+b+c}{\sin A+\sin B+\sin C} = \frac{1}{2R}$

(B) $\frac{\cos A}{\sqrt{4R^2-a^2}} = \frac{\cos B}{\sqrt{4R^2-b^2}} = \frac{\cos C}{\sqrt{4R^2-c^2}}$

(C) $\frac{a\sec A+b\sec B+c\sec C}{\tan A\tan B\tan C} = 2R$

(D) $\Delta = \sqrt{s(s+a)(s+b)(s+c)}$

3. In ΔABC, if cos A + cos B = 4 $\sin^2\frac{C}{2}$, then which of the following hold(s) good?

(A) $\cot\frac{A}{2}\cot\frac{B}{2}=2$ (B) $\cot\frac{A}{2}\cot\frac{B}{2}=3$ (C) a, c, b are in A.P. (D) a, b, c are in G.P.

4. The base BC of ΔABC is fixed and the vertex A moves, satisfying the condition

$\cot\frac{B}{2}+\cot\frac{C}{2}=2\cot\frac{A}{2}$, then

(A) b + c = a (B) b + c = 2a

(C) vertex A moves on a straight line (D) vertex A moves on an ellipse

5. In a triangle ABC, let a = 6, b = 3 and cos (A – B) = $\frac{4}{5}$.

Assertion (A): $\angle B = \frac{\pi}{2}$ **Reason (R):** $\sin A = \frac{2}{\sqrt{5}}$.

6.

Column I		**Column II**
(A)	In a scalene triangle ABC, if a cos A = b cos B then $\angle$ C equals	(P) 30°
(B)	In a triangle ABC, BC = 1 and AC = 2. The maximum possible value which the $\angle$ A can have is	(Q) 45°
(C)	In a Δ ABC $\angle$ B = 75° and BC = 2AD where AD is the altitude from A, then $\angle$ C equals	(R) 60°
		(S) 90°

7. In any ΔABC, prove that $\sum\frac{\cos A}{c\cos B+b\cos C}=\frac{a^2+b^2+c^2}{2abc}$.

8. In any ΔABC, prove that $\frac{(a+b+c)^2}{a^2+b^2+c^2} = \frac{\cot\frac{A}{2}+\cot\frac{B}{2}+\cot\frac{C}{2}}{\cot A+\cot B+\cot C}$.

9. In a triangle ABC if (a + b + c) (b + c – a) = λ bc then prove that $0 < \lambda < 4$.

10. In triangle ABC, if b sinC (b cosC + c cosB) = 42, then find the area of the triangle ABC.

11. Prove that {cot (A/2) + cot (B/2)} {a $\sin^2$ (B/2) + b $\sin^2$ (A/2)} = c cot (C/2).

ANSWERS

1. C **2.** C **3.** BC **4.** BD **5.** D **6.** (A)–S; (B)–P; (C)–P **10.** 21

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Target IIT-JEE 2014

Class XI **Date : 11- 09- 12** **Batch : P** **Time : 60 Min.** **DPP.No. 39**

1. Area of a triangle inscribed in a circle of radius 4, if the measures of its angles are in the ratio 5: 4: 3 is

(A) $4(\sqrt{3}-\sqrt{2})$ (B) $4(\sqrt{3}+\sqrt{2})$ (C) $4(3-\sqrt{3})$ (D) $4(3+\sqrt{3})$

2. Δ ABC is isosceles with AB = AC and $\angle$CAB = 106º. Point M is the interior of the triangle so that $\angle$MBA = 7º and $\angle$MAB = 23º. The number of degrees in $\angle$AMC is equal to

(A) 87º (B) 67º (C) 74º (D) 83º

3. In ΔABC, the ratio $\frac{a}{\sin A}=\frac{b}{\sin B}=\frac{c}{\sin C}$ is not always equal to

(A) 2R, where R is the circumradius (B) $\frac{abc}{2\Delta}$, where Δ is the area of the tnangle

(C) $\frac{2}{3}(a^2+b^2+c^2)^{1/2}$ (D) $\frac{(abc)^{\frac{2}{3}}}{(h_1h_2h_3)^{\frac{1}{3}}}$

4. If in a triangle ABC angle B = 90^0 then $\tan^2 A/2$ is :

(A) $\frac{b-c}{a}$ (B) $\frac{b-c}{b+c}$ (C) $\frac{b+c}{b-c}$ (D) None

5. In triangle ABC the expansion $\frac{1}{4a^2b^2}$ (a + b + c) (b + c – a) (c + a – b) (a + b – c) is equal to

(A) $2\sin^2 C$ (B) $4\sin^2 C$ (C) $\sin^2 C$ (D) sin C . cos C

6. If l, m, n are the perpendiculars from the angular points of at ΔABC upon the opposite sides a, b, c respectively then, $\frac{bl}{c}+\frac{cm}{a}+\frac{an}{b}$ is equal to

(A) $\frac{a^2+b^2+c^2}{2R}$ (B) $\frac{ab+bc+ca}{R}$ (C) $\frac{(a+b+c)^2}{4R}$ (D) 4R (1 + cosA cosB cosC)

7. If the median of a triangle ABC through A is perpendicular to AB then $\frac{\tan A}{\tan B}$ has the value equal to

(A) 1/2 (B) 2 (C) – 2 (D) – 1/2

8. The base angle of a Δ are 22.5° and 112.5°. The ratio of the base to the height of the triangle is

(A) $\sqrt{2}$ (B) 2 (C) $(2\sqrt{2}-1)$ (D) $\sqrt{2}+1$

9. If a, b, c the sides of a triangle ABC be 5, 4, 3 respectively and D, E are the points of trisection of side BC, then prove that tan $\angle$ CAE = 3/8.

10. Let a, b, c be the sides of a triangle & Δ its area. Prove that $a^2+b^2+c^2 \geq 4\sqrt{3}\,\Delta$. When does the equality hold ?

11. In a ΔABC, let angles A, B, C are in G.P. with common ratio 2. If circum radius of ΔABC is 2 then find the value $(b^{-1}+c^{-1}-a^{-1})$.

ANSWERS

1. D **2.** D **3.** C **4.** B **5.** C **6.** A **7.** **8.** B **11.** 0

VKR Classes
Daily Practice Problems

Vinay Kumar (B. Tech., IIT Delhi)
Target IIT-JEE 2014

Class XI **Date : 13- 09- 12** **Batch : P** **Time : 60 Min.** **DPP.No. 40**

1. The product of the arithmetic mean of the lengths of the sides of a triangle and harmonic mean of the lengths of the altitudes of the triangle is equal to :

(A) Δ (B) 2Δ (C) 3Δ (D) 4Δ

2. In triangle ABC, AA_1 and AA_2 are the medians and altitudes respectively. Length A_1A_2 is equal to-

(A) $\dfrac{|a^2-c^2|}{2b}$ (B) $\dfrac{|a^2-b^2|}{2c}$ (C) $\dfrac{|b^2-c^2|}{2a}$ (D) None of these

3. In a triangle ABC, CH and CM are the lengths of the altitude and median to the base AB. If a = 10, b = 26, c = 32 then length (HM)

(A) 5 (B) 7 (C) 9 (D) none

Comprehension

Consider a triangle ABC with b = 3. Altitude from the vertex B meets the opposite side in D, which divides AC internally in the ratio 1 : 2. A circle of radius 2 passes through the point A and D and touches the circumcircle of the triangle BCD at D.

4. If E is the centre of the circle with radius 2 then angle EDA equals

(A) $\sin^{-1}\left(\dfrac{\sqrt{15}}{4}\right)$ (B) $\sin^{-1}\left(\dfrac{3}{4}\right)$ (C) $\sin^{-1}\left(\dfrac{1}{4}\right)$ (D) $\sin^{-1}\left(\dfrac{15}{16}\right)$

5. If F is the circumcentre of the triangle BDC then which one of the following does not hold good ?

(A) $\angle FCD = \sin^{-1}\left(\dfrac{\sqrt{15}}{4}\right)$ (B) $\angle FDC = \cos^{-1}\left(\dfrac{1}{4}\right)$

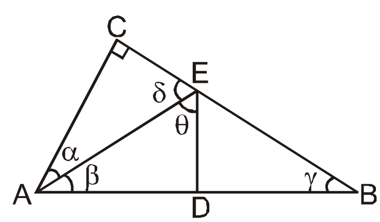
(C) triangle DFC is an isosceles triangle (D) Area of $\Delta ADE = (1/4)^{th}$ of the area of ΔDBC

6. If R is the circumradius of the ΔABC, then R equal

(A) 4 (B) 6 (C) $2\left(\sqrt{\dfrac{61}{15}}\right)$ (D) $4\left(\sqrt{\dfrac{61}{15}}\right)$

Comprehension

In the figure below, it is given that $\angle C = 90°$, AD = DB, ED is perpendicular to AB, AB = 20 units and AC = 12 units.



7. Area of triangle AEC is

(A) 24 sq. units (B) 21 sq. units

(C) 42 sq. units (D) $\dfrac{21}{2}$ sq. units

8. The value of $\tan(\delta+\beta)$ is

(A) $-\dfrac{177}{44}$ (B) $\dfrac{17}{4}$ (C) $\dfrac{3}{4}$ (D) $\dfrac{5}{4}$

9. The value of $\cos(\alpha+\beta)$ is

(A) $\dfrac{4}{5}$ (B) $\dfrac{3}{5}$ (C) $\dfrac{117}{125}$ (D) $-\dfrac{44}{125}$

ANSWERS

1. B **2.** C **3.** C **4.** A **5.** D **6.** C **7.** B **8.** A **9.** B

Class XI **Date : 15- 09- 12** **Batch : P** **Time : 60 Min.** **DPP.No. 41**

1. In ΔABC, if tan A and tan B are the roots of the equation $ab(x^2 + 1) = c^2 x$, then which of the following hold(s) good?

(A) $\sin^3 C + \cot^3 C = 1$ (B) $\cos^2 A + \cos^2 B = 1$ (C) $\tan(A - B) = \dfrac{a^2 - b^2}{2ab}$ (D) $R + r = \dfrac{a+b}{2}$

2. **Assertion (A):** Suppose ABC is a triangle such that AB = 13, BC = 15 and CA = 14. D is the midpoint of BC, E is the midpoint of AD, F is the midpoint of BE, and G is the midpoint of DF. Then the area of triangle EFG is 21/4.

Reason (R): $\Delta EFG = \dfrac{1}{2}\ \Delta DEF = \dfrac{1}{4}\ \Delta BDE = \dfrac{1}{8}\ \Delta ABD = \dfrac{1}{16}$ ABC.

3. A triangle is inscribed in a circle of radius R. The length of the sides of the triangle are 7,8 and 9 units,
Assertion (A): The radius R has an irrational value.
Reason (R): Area of the triangle has an irrational value.

Comprehension

In a triangle ABC, let tan A = 1, tan B = 2, tan C = 3 and c = 3.

4. Area of the triangle ABC is equal to

(A) $\dfrac{3\sqrt{2}}{2}$ (B) 3 (C) $2\sqrt{3}$ (D) $3\sqrt{2}$

5. The radius of the circle circumscribing the triangle ABC, is equal to

(A) $\dfrac{\sqrt{10}}{2}$ (B) $\sqrt{5}$ (C) $\sqrt{10}$ (D) $\dfrac{\sqrt{5}}{2}$

6. Let Δ denote the area of the triangle ABC and Δ_p be the area of its pedal triangle. If $\Delta = k\,\Delta_p$ then k is equal to

(A) $\sqrt{10}$ (B) $2\sqrt{5}$ (C) 5 (D) $2\sqrt{10}$

7.

	Column - I	**Column - II**	
(A)	In a ΔABC if 3 R = 4r then the value of 4(cosA + cosB + cosC) is equal to	(P)	5
(B)	A triangle has sides of lengths 1, 2 and $\sqrt{7}$. If the length of the internal angle bisector drawn from the vertex opposite to the side length $\sqrt{7}$ can be expressed as rational in the lowest form $\dfrac{m}{n}$ then the value of(m + n), is	(Q)	7
(C)	Let H be the orthocentre of the triangle ABC. If $(AH)^2 + (BH)^2 + (CH)^2 + (AB)^2 + (BC)^2 + (CA)^2 = kR^2$ then k equals	(R)	10
(D)	Consider a triangle ABC and let a, b and c denote the lengths of the sides opposite to the vertices A, B and C respectively. If a, b, c are the roots of $t^3 - 12t^2 + 47t = 60$, then the value of $24\left(\dfrac{\cos A}{a} + \dfrac{\cos B}{b} + \dfrac{\cos C}{c}\right)$ is equal to	(S)	12
		(T)	15

ANSWERS

1. ABCD **2.** A **3.** **4.** B **5.** A **6.** C **7.** (A)–Q, (B)–P, (C)–S, (D)–R

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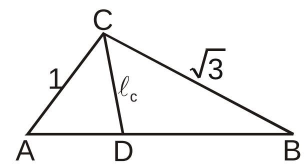
Target IIT-JEE 2014

Class XI **Date : 18- 09- 12** **Batch : P** **Time : 60 Min.** **DPP.No. 42**

1. A circle is inscribed in a triangle ABC, right angled at C. The circle is tangent to the segment AB at D and the length of segments AD and DB are 7 and 13 respectively. Area of triangle ABC is equal to
(A) 91 (B) 96 (C) 100 (D) 104

2. Let ABC be a right triangle with $\angle BAC = 90^\circ$ then $\left(\frac{r^2}{2R^2} + \frac{r}{R}\right)$ is equal to
(A) sin B sin C (B) tan B tan C (C) sec B sec C (D) cot B cot C

3. A triangle ABC has sides AB of length 2 units, AC of length 1 unit and BC of length $\sqrt{3}$ unit. The angle bisector l_C intersects the side AB at the point D. The length AD is.



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

4. In ΔABC, $2R + r = r_1$

Assertion (A): $\left(1 - \frac{r_1}{r_2}\right)\left(1 - \frac{r_1}{r_3}\right) = 2$

Reason (R): ΔABC is right angled at A.

5. **Assertion (A):** In ΔABC, if $r_1 = 2r_2 = 3r_3$ then a: b: c = 5 : 4 : 3
Reason (R): In ΔABC, if $xr_1 = yr_2 = zr_3 = (x + y + z)r$, then a : b : c = y+ z : x + z : x + y.

6. With usual notations, in a ΔABC the value of $\Pi(r_1 - r)$ can be simplified as:
(A) $abc\,\Pi \tan \frac{A}{2}$ (B) $4\,r\,R^2$ (C) $\frac{(a\,b\,c)^2}{R(a\,b\,c)^2}$ (D) $4\,R\,r^2$

7. In a ΔABC, a semicircle is inscribed whose diameter lies on the side c. If x is the length of the angle bisector through angle C then the radius of the semicircle is
(A) $\frac{abc}{4R^2(\sin A + \sin B)}$ (B) $\frac{\Delta}{x}$
(C) $x \sin \frac{C}{2}$ (D) $\frac{2\sqrt{s(s-a)(s-b)(s-c)}}{s}$

8. In a ΔABC, if r = 1, R = 3, s = 5, then which of the following is/are correct?
(A) Area of ΔABC is 5. (B) Product of the sides of the $\Delta ABC$is 60.
(C) $a^2 + b^2 + c^2 = 24$ (D) Sum of the ex-radii of ΔABC is 13

9. In ΔABC if $B = \pi/2$, $s - a = 3$; $s - c = 2$, then which of the following hold good?
(A) r = 1 (B) $\Delta = 12$ (C) $r_1 = 2$ (D) R = 5/2

10. Select the statement(s) which is/are true with respect to a triangle ABC, all symbols have their usual meaning.
(A) The inradius, circumradius and one of the exradii of an equilateral triangle are in the ratio of 1 : 2 : 3.
(B) $abc = \frac{1}{4}$ Rrs (C) If r = 3 then the value of $\frac{1}{r_1} + \frac{1}{r_2} + \frac{1}{r_3} = \frac{1}{3}$
(D) If the diameter of an excircle be equal to the perimeter of the triangle then the triangle is a right angle.

ANSWERS

1. A **2.** A **3.** A **4.** A **5.** A **6.** ACD **7.** AC **8.** ABCD **9.** ACD **10.** ACD

Class XI **Date : 20- 09- 12** **Batch : P** **Time : 60 Min.** **DPP.No. 43**

1. ABC is an acute angled triangle with circumcentre 'O' orthocentre H. If AO = AH then the measure of the angle A is

(A) $\frac{\pi}{6}$ (B) $\frac{\pi}{4}$ (C) $\frac{\pi}{3}$ (D) $\frac{5\pi}{12}$

2. Let h_a, h_b, h_c are lengths of altitudes drawn from vertices A, B, C to sides BC CA and AB respectively.The minimum value of $\frac{a}{h_a}+\frac{b}{h_b}+\frac{c}{h_c}$ is equal to

(A) $\sqrt{3}$ (B) $2\sqrt{3}$ (C) $3\sqrt{3}$ (D) $4\sqrt{3}$

3. If the orthocentre of a Δ ABC lies on its circumcircle then :

(A) Δ ABC is an obtuse angled triangle

(B) Δ ABC is an acute angled triangle

(C) Δ ABC could be an acute or obtuse angled triangle

(D) Δ ABC is such that Π cosA vanishes where Π denotes the continued product .

4. If the data given to construct a triangle ABC is a = 5, b = 7, sin A = 3/4, then it is possible to construct-

(A) only one triangle (B) two triangles

(C) infinitely many triangles (D) no triangles

5. If two sides a, b and the angle A be such that two triangles are formed, then the sum of the two values of the third side is

(A) $b^2 - a^2$ (B) 2b cos A (C) 2b sin A (D) $\frac{b-c}{b+c}$

6. In an isosceles Δ ABC if the altitudes intersect on the inscribed circle then the cosine of the vertical angle 'A' is :

(A) 1/9 (B) 1/3 (C) 2/3 (D) none

7.

	Column - I		**Column - II**
(A)	If 'O' is the circumcentre of the ΔABC and R_1, R_2 and R_3 are the radii of the circumcircles of triangles OBC, OCA and OAB respectively then $\frac{a}{R_1}+\frac{b}{R_2}+\frac{c}{R_3}$ has the value equal to	(P)	$\frac{r}{R}$
(B)	AD, BE and CF are the perpendiculars from the angular points of a ΔABC upon the opposite sides. The perimeters of the ΔDEF and ΔABC are in the ratio	(Q)	$\frac{4\Delta}{R^2}$
(C)	If the incircle of the ΔABC touches its sides respectively at L, M and N and if x, y, z be the circumradii of the triangles MIN, NIL and LIM where I is the incentre then the value of $\frac{xyz}{r^3}$, is	(R)	$\frac{R}{2r}$
		(S)	$\frac{\Delta}{4R^2}$

ANSWERS

1. C **2.** B **3.** D **4.** D **5.** B **6.** A **7.** (A)–Q, (B)–P, (C)–R

Class XI **Date : 29- 06- 11** **Batch : V** **Time : 60 Min.** **DPP.No. 09**

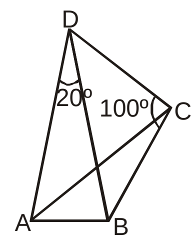
1. The area of the circle exceeds the area of regular polygon of n sides and of equal perimeter in the ratio of

(A) $\tan\frac{\pi}{n} : \frac{\pi}{n}$ (B) $\cos\frac{\pi}{n} : \frac{\pi}{n}$ (C) $\sin\frac{\pi}{n} : \frac{\pi}{n}$ (D) $\cot\frac{\pi}{n} : \frac{\pi}{n}$

2. If the number of sides of two regualr polygons hoving the some perameter be n and 2n, prove that their areas are in the ratio $2\cos\frac{\pi}{n} : \left(1+\cos\frac{\pi}{n}\right)$.

3. The radius of the circle circumscribed about regular n-gon $A_1A_2 .... A_n$ is equal to R. Prove that the sum of all sides and of all diagonal of n-gon is equal to $nR\cot\left(\frac{\pi}{2n}\right)$.

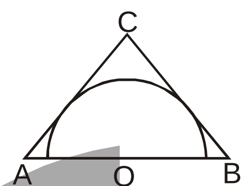
4. ABCD is a quadrilateral with an area of 1 and $\angle BCD = 100^o$, $\angle ADB = 20^o$, AD = BD and BC = DC as shown in the figure. The product (AC) × (BD) is equal to



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

(C) $\sqrt{3}$ (D) $\frac{4\sqrt{3}}{3}$

5. In the figure, ΔABC is a right triangle at C. A semicircle with centre 0 is tangent to the side AC and BC. If the area of the triangle is Δ, then the radius of the semicircle is



(A) $\frac{2\Delta}{\sqrt{c^2+2\Delta}}$ (B) $\frac{\Delta}{\sqrt{c^2+2\Delta}}$

(C) $\frac{2\Delta}{\sqrt{c^2+4\Delta}}$ (D) $\frac{2\Delta}{\sqrt{c^2+\Delta}}$

6. In a triangle ABC, if $\angle A = 30^o$ b = 10 and a = x, then the values of x for which there are 2 possible triangles is given by

(A) $5 < x < 10$ (B) $x < \frac{5}{2}$ (C) $\frac{5}{3} < x < 10$ (D) $\frac{5}{2} < x < 10$

7. In a triangle ABC, BC = 5, $\angle B = 45^o$, $\angle C = 60^o$ and AD is altitude to side BC. Assuming AD as diameter, a circle is drawn which cuts side AB and AC at P and Q respectively. The length PQ is equal to

(A) $\frac{5\sqrt{3}}{4\sqrt{2}}$ (B) $\frac{5\sqrt{3}}{2}$ (C) $\frac{5\sqrt{3}}{2\sqrt{2}}$ (D) $\frac{5\sqrt{3}}{\sqrt{2}}$

8. Let ABCD be a cyclic quadrilateral such that AB = 2, BC = 3, $\angle B = 120^o$ and area of quadrilateral = $4\sqrt{3}$. Which of the following is/are correct?
(A) The value of $(AC)^2$ is equal to 19
(B) The sum of all possible values of product AC . BD is equal to 35
(C) The sum of all possible values of $(AD)^2$ is equal to 29
(D) The value of $(CD)^2$ can be 4

9. Two circles are passing through vertex A of triangle ABC and one of the circle touches the side BC at B and other circle touches the side BC at C. If a = 5 and $\angle A = 30^o$ then find the product of radii of two circles.

ANSWERS

4. D **5.** C **6.** A **7.** C **8.** ABCD **9.** 25