MATHS

BOOKS - OBJECTIVE RD SHARMA

ENGLISH

SOLUTIONS OF TRIANGLES

Illustration

1. In a right triangle ABC, right angled at C, if a = 7 cm and b = $7\sqrt{3}$ cm, then $\angle A$=

A. 30°

B. 60°

C. 45°

D. none of these

Answer: A

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2. In a ΔABC, if $B = 90^\circ$, then $\tan^2 . \frac{A}{2} =$

A. $\frac{a-b}{a+b}$

B. $\frac{b-c}{b+c}$

C. $\frac{c-a}{c+a}$

D. $\frac{b+c}{b-c}$

Answer: B

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3. If $A = 30^\circ, c = 7\sqrt{3}$ and $C = 90^\circ$ in ΔABC, then a =

A. $7\sqrt{3}$

B. $7\sqrt{3}/2$

C. $7/2$

D. none of these

Answer: B

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4. If two sides and included angle of a triangle are respectively $3+\sqrt{3}, 3-\sqrt{3}$ and 60°, then the third sides is

A. $2\sqrt{2}$

B. $4\sqrt{2}$

C. $3\sqrt{2}$

D. none of these

Answer: C

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5. If the angles of a triangle are $30^0 and 45^0$ and the included side is $\left(\sqrt{3}+1\right)cm$ then the area of the triangle is_____.

A. $\frac{\sqrt{3}-1}{2}cm^2$

B. $\frac{\sqrt{3}+1}{2}cm^2$

C. $\left(\sqrt{3}-1\right)cm^2$

D. none of these

Answer: B

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6. If $b=3, c=4, andB=\frac{\pi}{3}$, then find the number of triangles that can be constructed.

A. 0

B. 1

C. 2

D. Infinite

Answer: A

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7. If a $\Delta ABC, a, b,$ A are given and b_1, b_2 are two values of the third sides b such that $b_2 = 2b_1$. Then, sin A is equal to

A. $\sqrt{\frac{9a^2 - c^2}{8a^2}}$

B. $\sqrt{\frac{9a^2 - c^2}{8c^2}}$

C. $\sqrt{\frac{9a^2 + c^2}{8a^2}}$

D. none of these

Answer: B

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Section I Solved Mcqs

1. In a ΔABC if the length of the sides are $\sqrt{2}, \sqrt{6}$ and $\sqrt{8}$, then the measures of the angles are

A. $30^\circ, 60^\circ, 90^\circ$

B. $45^\circ, 75^\circ, 60^\circ$

C. $45^\circ, 30^\circ, 105^\circ$

D. none of these

Answer: A

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2. In a ΔABC, if a 100, c = 100 $\sqrt{2}$ and $A = 30^\circ$, then B equals to

A. 45° or 135°

B. 105° or 15°

C. 60° or 120°

D. none of these

Answer: B

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3. In a ΔABC, if $A = 45^\circ$ and $B = 75^\circ$, then $a + \sqrt{2}c =$

A. b

B. 2b

C. 3b

D. none of these

Answer: B

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4. In a ΔABC, if a = 40, $c = 40\sqrt{3}$ and $B = 30^\circ$, then the triangle is

A. isosceles

B. equilateral

C. right angled

D. none of these

Answer: A

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5. If $a = \sqrt{3} + 1, B = 30^\circ, C = 45^\circ$, then $c =$

A. 3

B. 2

C. 4

D. none of these

Answer: B

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6. In a ΔABC, if a = 4, b = 3 and $\angle A = 60^\circ$, then c is a root of the equation

A. $c^2 - 3c - 7 = 0$

B. $c^2 + 3c + 7 = 0$

C. $c^2 - 3c + 7 = 0$

D. $c^2 + 3c - 7 = 0$

Answer: A

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7. In a triangle, the lengths of the two larger sides are 10 and 9, respectively. If the angles are in A.P, then the length of the third side can be (a) $5-\sqrt{6}$ (b) $3\sqrt{3}$ (c) 5 (d) $5+\sqrt{6}$

A. $5 \pm \sqrt{6}$

B. $3\sqrt{3}$

C. 5

D. none of these

Answer: A

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8. In a ΔABC, if $b = \sqrt{3} + 1, c = \sqrt{3} - 1$ and $A = 60^\circ$, then the value of $\tan. \frac{B - C}{2}$ is

A. -1

B. $1/2$

C. 1

D. none of these

Answer: C

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9. Let the angles A, $BandC$ of triangle ABC be in $A\dot{P}\cdot$ and let $b:c$ be $\sqrt{3}:\sqrt{2}$. Find angle $A\cdot$

A. 75°

B. 60°

C. 45°

D. 30°

Answer: A

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10. In a ΔABC, if $A = 120^\circ, b = 2$ and $C = 30^\circ$, then a=

A. $2\sqrt{3}$

B. 2

C. $\frac{\sqrt{3}}{2}$

D. $\frac{1}{2}$

Answer: A

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11. In a ΔABC, if $A = 30^\circ$, $C = 105^\circ$ and $b = 3\sqrt{2}$, then a =

A. $\sqrt{2}$

B. 3

C. $3\sqrt{2}$

D. 2

Answer: B

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12. If $a = \sqrt{3} + 1, B = 30^\circ, C = 45^\circ,$ then $c =$

A. 2

B. 3

C. 4

D. none of these

Answer: A

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13. In a ΔABC, if a = 3, $b = 2\sqrt{3}$ and $c = \sqrt{3}$, then A=

A. 30°

B. 45°

C. 60°

D. 75°

Answer: C

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14. In a ΔABC, if a = 5, $B = 45^\circ$ and $c = 2\sqrt{2}$, then b=

A. $\sqrt{3}$

B. 6

C. $2\sqrt{13}$

D. $\sqrt{13}$

Answer: D

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15. In $\Delta ABC, If \frac{b}{c^2 - a^2} + \frac{a}{c^2 - b^2} = 0$ then

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

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

C. $\frac{2\pi}{3}$

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

Answer: D

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16. In the ambiguous case, if a, b and A are given and c_1, c_2 are the two values of the third $(c_1 - c_2)^2 + (c_1 + c_2)^2 \tan^2 A$ is equal to

A. 4

B. $4a^2$

C. $4b^2$

D. $4c^2$

Answer: B

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Exercise

1. If $b = 3, c = 4, and B = \frac{\pi}{3}$, then find the number of triangles that can be constructed.

A. Infinite

B. two

C. one

D. nil

Answer: D

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2. If the data given to construct a triangle ABC are 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

Answer: D

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3. We are given b, c and sin B such that B is acute and $b < c$ sin B. Then,

A. no triangle is possible

B. one triangle is possible

C. two triangles are possible

D. a right-angled triangle is possible

Answer: A

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4. In a ABC, if $= 2, \angle B = 60^0 and \angle C = 75^0$,

then $b = \sqrt{3}$ (b) $\sqrt{6}$ (c) $\sqrt{9}$ (d) $1 + \sqrt{2}$

A. $\sqrt{3}$

B. $\sqrt{6}$

C. $\sqrt{9}$

D. $1 + \sqrt{2}$

Answer: B

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5. In $\Delta ABC, \quad \text{if} \quad A = 30^\circ, b = 8, a = 6, B = \sin^{-1} x$, then $x =$

A. $1/2$

B. $1/3$

C. $2/3$

D. 1

Answer: C

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6. If $a = 2, b = 3, c = 5 \text{ in } \Delta ABC$, then C=

A. $\frac{\pi}{6}$

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

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

D. none of these

Answer: D

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7. In ΔABC,

if the sides are 7, $4\sqrt{3}$ and $\sqrt{13}$ cm, prove that the smallest angle is 30°.

A. 15°

B. 45°

C. 30°

D. none of these

Answer: C

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8. In a ΔABC, if c = 2, $A = 120^\circ$, $a = \sqrt{6}$, then C=

A. 30°

B. 60°

C. 45°

D. none of these

Answer: C

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9. If $A = 30^0, a = 7, andb = 8$ in $ABC,$ then find the number of triangles that can be constructed.

A. one solution

B. two solutions

C. no solutions

D. none of these

Answer: B

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10. If a $\Delta ABC, b = 2, C = 60^\circ, c = \sqrt{6}$, then a

=

A. $\sqrt{3} - 1$

B. $\sqrt{3}$

C. $\sqrt{3} + 1$

D. none of these

Answer: C

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11. In ΔABC, let $a = 5, b = 4$ and $\cos\left(A - B = \frac{31}{32}\right)$, then which of the following statement (s) is (are) correct ?

[Note All symbols used have usuall meaning in a triangle]

A. 6

B. 7

C. 9

D. none of these

Answer: A

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12. In a ΔABC, If $A = 30^\circ, b = 2, c = \sqrt{3} + 1,$ then $\frac{C - B}{2}$ is

A. 15°

B. 30°

C. 45°

D. none of these

Answer: B

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13. In a ΔABC if a = 2, $b = \sqrt{6}, c = \sqrt{3} + 1$, then cos A=

A. 30°

B. 45°

C. 60°

D. none of these

Answer: B

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14. In a ΔABC, if $A = 45^\circ$, $b = \sqrt{6}$, a=2, then B=

A. 30° or 150°

B. 60° or 120°

C. 45° or 135°

D. none of these

Answer: B

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15. In a triangle, the lengths of the two larger sides are 10 and 9, respectively. If the angles are in A.P, then the length of the third side can be

(a) $5-\sqrt{6}$ (b) $3\sqrt{3}$ (c) 5 (d) $5+\sqrt{6}$

A. $5 \pm \sqrt{6}$

B. 0.7

C. $\sqrt{5}+6$

D. none of these

Answer: A

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16. The sides of a triangle are $3x + 4y, 4x + 3y$ and $5x + 5y$ units, where $x > 0, y > 0$. The triangle is

A. right angled

B. equilateral

C. obtuse angled

D. none of these

Answer: C

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17. In a ΔABC, a, b, A are given and c_1, c_2 are two values of the third side c. The sum of the areas two triangles with sides a,b, c_1 and a, b, c_2 is

A. $(1/2)b^2 \sin 2A$

B. $(1/2)a^2 \sin 2A$

C. $b^2 \sin 2A$

D. none of these

Answer: A

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18. In the ambiguous case, if a, b and A are given and c_1, c_2 are the two values of the third side, then $(c_1 - c_2)^2 + (c_1 + c_2)^2 \tan^2 A$ is equal to

A. $2\sqrt{a^2 - b^2}$

B. $\sqrt{a^2 - b^2 \sin^2 A}$

C. $2\sqrt{a^2 - b^2 \sin^2 A}$

D. $\sqrt{a^2 - b^2}$

Answer: C

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19. In the ambiguous case, if a, b and A are given and c_1, c_2 are the two values of the third side, then $(c_1 - c_2)^2 + (c_1 + c_2)^2 \tan^2 A$ is equal to

A. $4a^2 \cos^2 A$

B. $4a^2 \cos A$

C. $4a\cos^2 A$

D. none of these

Answer: A

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20. The smallest angle of the triangle whose sides are $6+\sqrt{12}, \sqrt{48}, \sqrt{24}$ is

A. $\pi/3$

B. $\pi/4$

C. $\pi / 6$

D. none of these

Answer: C

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