Final Revision
Trigonometry

Choose the correct answer

In ΔXYZ , $XY : YZ =$ .....

(a) $\sin X : \sin Y$ (b) $\sin Y : \sin Z$ (c) $\sin Z : \sin X$ (d) $\sin Z : \sin Y$

Choose the correct answer

In ΔABC , if $m(\angle A) = 30°$, $a = 6$ cm. , then $\frac{b}{\sin B} =$ .....

(a) 3 (b) 6 (c) $\frac{1}{5}$ (d) 12

$$\frac{b}{\sin B} = \frac{a}{\sin A} = \frac{6}{\sin 30} = 12$$

Choose the correct answer

In ΔXYZ if $m(\angle X) = 60°$, $m(\angle Y) = 30°$, $x = 4\sqrt{3}$ cm. , then z = ... cm.

(a) 6 (b) $4\sqrt{3}$ (c) 8 (d) $8\sqrt{3}$

$m(\angle Z) = 90$

$$\frac{x}{\sin X} = \frac{z}{\sin Z} = \frac{4\sqrt{3}}{\sin 60} = \frac{z}{\sin 90}$$

$$z = 8$$

Choose the correct answer

ABC is a triangle in which a = 27 cm. , m (∠ B) = 82° , m (∠ C) = 56° , then the area of the triangle ≃ ..... cm^2

(a) 540 (b) 447 (c) 350 (d) 400

$A.of\ \Delta = \frac{1}{2}ab\sin C$

$= \frac{1}{2}(27)(40)\sin 56$

$\simeq 447$

$m(\angle A) = 180 - (82 + 56)$

$= 42$

$\frac{27}{\sin 42} = \frac{b}{\sin 82}$

$b = \frac{27\sin 82}{\sin 42} \simeq 40$

Choose the correct answer

In ΔABC : m $(\angle A) = 45°$, m $(\angle C) = 60°$, the radius of the circle passes through its vertices = 20 cm. , then the area of the triangle $\simeq$ ..... cm^2

(a) 462 (b) 473 (c) 452 (d) 493

$\frac{a}{\sin A} = \frac{c}{\sin C} = 2r$

$m(\angle B) = 180 - [45 + 60)$
$= 75$

$a = 2(20)\sin 45 = 20\sqrt{2}$ cm

$c = 2(20)\sin 60 = 20\sqrt{3}$ cm

$A = \frac{1}{2} ac \sin B$

$= \frac{1}{2}(20\sqrt{2})(20\sqrt{3})\sin 75$

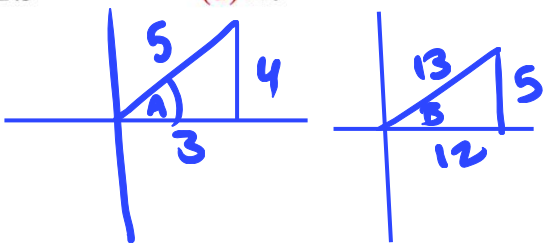
$= 473$ cm^2

Choose the correct answer

ABC is a triangle in which $\cos A = \frac{3}{5}$, $\tan B = \frac{5}{12}$, a = 52 cm. , then b = ... cm.

(a) 25 (b) 50 (c) 12.5 (d) 26

$$\frac{a}{\sin A} = \frac{b}{\sin B}$$



$$\frac{52}{4/5} = \frac{b}{5/13} \Rightarrow b = \frac{52 \times 5/13}{4/5} = 25$$

Choose the correct answer

If r is the radius of the circumcricle of triangle XYZ , then $\frac{y}{2 \sin Y}$ = ...

(a) r (b) 2 r (c) $\frac{1}{2}$ r (d) 4 r

$\frac{2r}{2\sin y} \cdot \frac{1}{2} \cdot \frac{y}{\sin y}$

$\frac{1}{2} \cdot (2r) = r$

Choose the correct answer

ABC is a triangle , in which a = 12 cm. , m (∠ A) = 30° , then the radius of its circumcircle = ... cm.

(a) 6 (b) 24 (c) 12 (d) $6\sqrt{3}$

$$\frac{a}{\sin A} = 2r$$

$$r = \frac{a}{2\sin A} = \frac{12}{2\sin 30} = 12$$

Choose the correct answer

A circle of diameter 20 cm. passes through the vertices of Δ ABC , a = 10 cm. , then m (∠ A) could be equal .....°

(a) 30 (b) 60 (c) 45 (d) 90

$$\frac{a}{\sin A} = 2r$$

$$\frac{10}{\sin A} = \frac{20}{1} \Rightarrow \sin A = \frac{1}{2}$$

30°

150

Choose the correct answer

In Δ XYZ if $\frac{2x}{\sin x} = 10$, then the diameter of the circle passes through its vertices equals ..... length units.

(a) 5 (b) 10 (c) 15 (d) 20

$2 \cdot \frac{x}{\sin x} = 10$

$2(2r) = 10$

$2(D) = 10 \Rightarrow D = 5$ cm

Choose the correct answer

ABC is an equilateral triangle , the length of its side is 6 cm. and the area of the circle passes through its vertices equals k π cm^2 , then k = ...

(a) $2\sqrt{3}$ (b) $8\sqrt{3}$ (c) 12 (d) 24

$$\frac{6}{2\sin 60} = r$$

$$\pi r^2 = k\pi$$

$$k = r^2$$

$$r = 2\sqrt{3}$$

$$k = r^2 = (2\sqrt{3})^2 = 12$$

Choose the correct answer

An equilateral triangle , the length of the diameter of the circle passes through its vertices $4\sqrt{3}$ cm. , then its area = ... cm.

(a) 18 (b) 36 (c) $18\sqrt{3}$ (d) $9\sqrt{3}$

$$\frac{a}{\sin 60} = 4\sqrt{3}$$

$$a = 4\sqrt{3}\sin 60 = 6$$

$$A = \frac{1}{2} \times 6 \times 6 \times \sin 60$$

$$= \frac{36\sqrt{3}}{4} = 9\sqrt{3} \text{ cm}^2$$

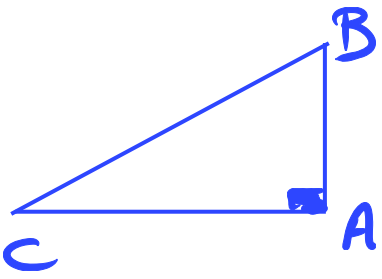
Choose the correct answer

$\log_n m$ $\log_m m^3$

ABC is a right-angled triangle at A in which AB = $(\log_4 3)$ cm. , AC = $(\log_3 64)$ cm. , then the area of Δ ABC = ... cm^2

(a) 1.5 (b) 3 (c) $\log 16$ (d) $\log_2 16$

$A = \frac{1}{2} AB \times AC$



$= \frac{1}{2} \times \log_4^3 \times \log_3^{64}$

$= \frac{1}{2} \times \frac{\log 3}{\log 4} \times \frac{\log 64}{\log 3}$

$= \frac{1}{2} \times \frac{\log 3}{\log 4} \times \frac{3\log 4}{\log 3} = \frac{3}{2} = 1.5$

Choose the correct answer

The area of ΔABC is $21\sqrt{3}$ cm^2 , a = 6 cm. , m($\angle$ B) = 60° , c = ... cm.

(a) 14 (b) 7 (c) $7\sqrt{3}$ (d) $14\sqrt{3}$

$$A = \frac{1}{2} ac \sin B = 21\sqrt{3}$$

$$\frac{1}{2} \times 6 \times c \times \sin 60 = 21\sqrt{3}$$

$$\frac{3\sqrt{3}}{2} c = 21\sqrt{3}$$

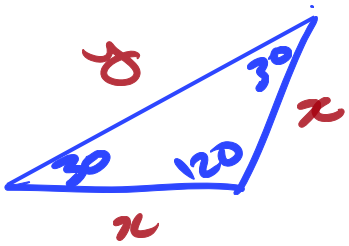
$$c = \frac{42}{3} = 14$$

Choose the correct answer

ABC is an isosceles triangle , in which m (∠ B) = 120° and the length of the diameter of the circle passes through its vertices = 8 cm. , then its area = ... cm^2

(a) $8\sqrt{3}$ (b) $4\sqrt{3}$ (c) 4 (d) 8

$\frac{x}{\sin 30} = \frac{x}{\sin 30} = \frac{y}{\sin 120} = 8$



$x = 8 \sin 30 = 4$

$A = \frac{1}{2} \times x \times x \times \sin 120$

$= \frac{1}{2} \times 4 \times 4 \times \frac{\sqrt{3}}{2} = 4\sqrt{3}\ cm^2$

Choose the correct answer

$m(\angle B) = 50°$

ΔABC , in which $a + 3b = 12$ cm. , $m(\angle A) = 70°$, $m(\angle C) = 60°$, then $c =$ .....

(a) 2.8 (b) 3 (c) 3.2 (d) 3.4

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{3b}{3\sin B} = \frac{a+3b}{\sin A + 3\sin B}$$

$$\frac{a}{\sin 70} = \frac{b}{\sin 50} = \frac{3b}{3\sin 50} = \frac{c}{\sin 60} = \frac{12}{\sin 70 + 3\sin 50}$$

$$c = \frac{12 \sin 60}{\sin 70 + 3\sin 50} = 3.2$$

Choose the correct answer

ABC is an acute-angled triangle in which $\sqrt{2}\, b = \frac{c}{\sin C}$, then m ($\angle$ B) = ...°

(a) 30 (b) 45 (c) 60 (d) 75

$$\frac{\sqrt{2}\, b}{1} = \frac{b}{\sin B}$$

$$\sin B = \frac{1\, b}{\sqrt{2}\, b}$$

$$m(\angle B) = \sin^{-1}\left(\frac{1}{\sqrt{2}}\right) = 45^\circ$$

Choose the correct answer

In ΔABC , if $c = 6 \sin C$, then $\frac{a-b}{\sin A - \sin B} = \ldots\ldots\ldots\ldots$

(a) 13 (b) 6 (c) 12 (d) zero

$$\frac{c}{\sin C} = \frac{a}{\sin A} = \frac{b}{\sin B} = 6$$

$$\frac{a-b}{\sin A - \sin B} = 6$$

Choose the correct answer

In ΔABC , $a - b = 4$ cm. , $\sin A = \frac{3}{2} \sin B$, then $a =$ .....

(a) 12 (b) 6 (c) 4 (d) 8

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{a-b}{\sin A - \sin B}$$

$$\frac{a}{\frac{3}{2}\sin B} = \frac{4}{\frac{3}{2}\sin B - \sin B}$$

$$\frac{a}{\frac{3}{2}\sin B} = \frac{4}{\frac{1}{2}\sin B}$$

$$a = 12$$

Choose the correct answer

In ΔABC, $\frac{\sin(A+B)}{\sin A+\sin B}=\frac{\sin C}{\sin A+\sin B}=\frac{c}{a+b}$

(a) $\frac{c}{a+b}$ (b) $\frac{a}{b+c}$ (c) $\frac{b}{a+c}$ (d) 1

$A+B+C=180$

$\cos(A+B)=-\cos C$

$\sin(A+B)=\sin C$

Choose the correct answer

If $\sin A : \sin B : \sin C = 3 : 4 : 5$, then $\frac{c + b}{a} = \frac{5m + 4m}{3m} = 3$

(a) 9 (b) $\frac{1}{3}$ (c) 3 (d) $\frac{9}{4}$

$a : b : c = 3 : 4 : 5$

Choose the correct answer

If the radius of the circle passes through the vertices of $\Delta ABC = 3$ cm.

, and $\sin A + \sin B + \sin C = 2$, then the perimeter of $\Delta ABC =$ ..... cm.

(a) 6 (b) 9 (c) 12 (d) 24

$$\frac{\text{P. of } \Delta ABC}{\sin A + \sin B + \sin C} = 2r$$

$$\frac{\text{P. } \Delta ABC}{2} = 2(3)$$

$$\text{P. } \Delta ABC = 12$$

Choose the correct answer

If r = the radius of the circle passes through the vertices of Δ ABC

, then $\frac{a+b+c}{\sin A+\sin B+\sin C}$ = ... 2r

(a) 4 (b) 2 r (c) 3 r (d) 6 r

Choose the correct answer

In ΔXYZ , if $m(\angle X) : m(\angle Y) : m(\angle Z) = 2 : 3 : 1$, then $x : y : z =$ .....

(a) $3 : \sqrt{2} : 1$ (b) $\sqrt{3} : 2 : 1$ (c) $\sqrt{2} : \sqrt{3} : 1$ (d) $2 : 3 : 1$

$m(\angle X) : \angle Y : \angle Z : Sum$

$2 : 3 : 1 : 6$

$60 : 90 : 30 \quad 180$

$x : y : z = \sin 60 : \sin 90 : \sin 30$

$= \frac{\sqrt{3}}{2} : 1 : \frac{1}{2} \quad \times 2$

$= \sqrt{3} : 2 : 1$

Choose the correct answer

In ΔABC , $m(\angle A) : m(\angle B) : m(\angle C) = 9 : 5 : 4$, $a = 8$ cm. , then the radius of the circle passes through its vertices = ... cm.

(a) 8 (b) 4 (c) 16 (d) 12

A : B : C : Sum

9 : 5 : 4 : 18

90 : 50 : 40 180

$\frac{a}{\sin A} = 2r$

$r = \frac{8}{2 \sin 90} = 4$

Choose the correct answer

If 4 sin A = 3 sin B = 2 sin C , then a : b : c = ...

(a) 2 : 3 : 4 (b) 4 : 2 : 3 (c) 6 : 4 : 3 (d) 3 : 4 : 6

$$\frac{4\sin A}{12} = \frac{3\sin B}{12} = \frac{2\sin C}{12}$$

$$\frac{\sin A}{3} = \frac{\sin B}{4} = \frac{\sin C}{6}$$

$$a : b : c = 3 : 4 : 6$$

Choose the correct answer

ABC is a triangle , in which b = 12 cm. , r is the radius of its circumcircle , then the area of the triangle = ... cm^2

(a) $\frac{2ac}{r}$ (b) $\frac{3ac}{r}$ (c) $\frac{4ac}{r}$ (d) $\frac{6ac}{r}$

$$\frac{a}{\sin A} = \frac{12}{\sin B} = \frac{c}{\sin C} = 2r$$

$$A = \frac{1}{2}ac\sin B$$

$$\sin B = \frac{12}{2r} = \frac{6}{r}$$

$$A = \frac{1}{2} \times a \times c \times \frac{6}{r} = \frac{3ac}{r}$$

Choose the correct answer

ΔXYZ is a triangle in which $YZ = 5$ cm. , $XZ = 3$ cm. , $\cos Z = \frac{-1}{2}$, then $XY =$ .....

(a) 7 (b) 49 (c) $\sqrt{7}$ (d) $\sqrt{8}$

$m(Z) = 120°$

$\frac{x}{\sin X} = \frac{y}{\sin Y} = \frac{z}{\sin Z}$

$xy = \sqrt{x^2 + y^2 - 2xy\cos Z}$

$xy = \sqrt{25 + 9 - 2(5)(3)(-\frac{1}{2})} = 7$

Choose the correct answer

ABC is a triangle in which its perimeter = 70 cm. , b = 30 cm. , c = 14 cm. , then m (∠ A) = ...°

(a) 30 (b) 60 (c) 120 (d) 150

$a + b + c = 70$

$a + 30 + 14 = 70$

$a = 70 - 44 = 26$

$\cos A = \frac{b^2 + c^2 - a^2}{2bc} = \frac{(30)^2 + (14)^2 - (26)^2}{2(30)(44)} = \frac{1}{2}$

$m(\angle A) = \cos^{-1}(\frac{1}{2}) = 60^\circ$

Choose the correct answer

In ΔABC : If $m(\angle A) + m(\angle B) = 120°$, $a = 2$ cm. , $b = 3$ cm. , then $c =$ ..... cm.

(a) 4 (b) 3 (c) $\sqrt{7}$ (d) $\sqrt{5}$

$m(\angle C) = 180 - 120 = 60°$

$c = \sqrt{a^2 + b^2 - 2ab\cos C}$

$c = \sqrt{4 + 9 - 2(2)(3)\cos 60} = \sqrt{7}$

Choose the correct answer

The measure of the greatest angle in Δ ABC which has side lengths 3 cm. , 5 cm. , 7 cm. equals .....°

(a) 110 (b) 150 (c) 100 (d) 120

Choose the correct answer

In Δ XYZ , if $x = 13$ cm. , $y = 14$ cm. , $z = 15$ cm. , then sin X = ...

(a) $\frac{3}{5}$ (b) $\frac{4}{5}$ (c) $\frac{2}{5}$ (d) $\frac{1}{5}$

Choose the correct answer

In Δ ABC if a = b , then cos B = ...

(a) $\frac{c}{2a}$ (b) $\frac{a}{2c}$ (c) $\frac{b}{2c}$ (d) $\frac{a}{2b}$

Choose the correct answer

In Δ ABC if $\frac{\sin A}{\sin C} = 2 \cos B$, then .....

(a) $b = a$ (b) $b = c$ (c) $c = a$ (d) $a = b = c$

Choose the correct answer

In $\Delta ABC : \frac{a^2 + b^2 - c^2}{a\,b} \in$ .....

(a) $[-2 , 2]$ (b) $]\frac{-1}{2} , \frac{1}{2}[$ (c) $]-2 , 2[$ (d) $[-1 , 1]$

Choose the correct answer

ABC is a triangle in which $a^2 + b^2 - c^2 + \sqrt{3}\, a\, b = 0$, then m $(\angle C)$ = ...

(a) 30° (b) 150° (c) 60° (d) 120°

Choose the correct answer

In ΔABC if $(a + b - c)(a + b + c) = 3ab$, then $m(\angle C) =$ .....°

(a) 30 (b) 60 (c) 120 (d) 150

Choose the correct answer

In ΔABC , if $\frac{a-b}{b+c} = \frac{c}{a+b}$, then : m $(\angle A)$ = ...°

(a) 60 (b) 30 (c) 45 (d) 120

Choose the correct answer

In ΔABC , if $a : b : c = 3 : 2 : 2$, then $\cos A =$ .....

(a) $\frac{1}{8}$ (b) $\frac{-1}{8}$ (c) $\frac{1}{4}$ (d) $\frac{3}{4}$

Choose the correct answer

In Δ ABC : 6 a = 4 b = 3 c , then measure of smallest angle to the nearest minute $\simeq$ .....

(a) $57^\circ\ 28\grave{}$ (b) $41^\circ\ 12\grave{}$ (c) $28^\circ\ 57\grave{}$ (d) $36^\circ\ 52\grave{}$

Choose the correct answer

If ABCD is a cyclic quadrilateral , then cos A + cos C = ...

(a) zero (b) 1 (c) $\frac{1}{2}$ (d) – 1

Choose the correct answer

If ABCD is a parallelogram , then cos A + cos B = ...

(a) 1 (b) zero (c) – 1 (d) 0.1

Choose the correct answer

ABCD is a parallelogram , in which AB = 8 cm. , BC = 11 cm. , BD = 9 cm. , then length of $\overline{AC} \approx$ ..... cm.

(a) 6 (b) 10 (c) 11 (d) 17

Choose the correct answer

In the triangle XYZ , $(\mathcal{X}\ y\ z)$: $\sin \mathcal{X} \sin y \sin z =$ .....

(where r is radius of its circumcircle)

(a) $2\ r$ (b) $8\ r$ (c) $8\ r^2$ (d) $8\ r^3$

Choose the correct answer

Δ XYZ in which : $\frac{x}{\sin x} + \frac{y}{\sin y} + \frac{z}{\sin z} = 12$, then radius of the circumcircle of Δ XYZ = ... cm.

(a) 2 (b) 6 (c) 12 (d) 4

Choose the correct answer

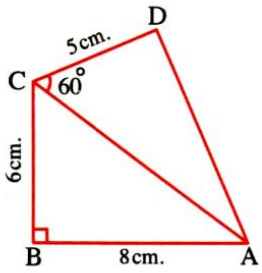
In the opposite figure :

ABCD is a quadrilateral in which :

AB = 8 cm. , BC = 6 cm. , m (∠ B) = 90°

, DC = 5 cm. , m (∠ ACD) = 60°

, then the area of the circumcircle of Δ ADC = ... cm^2



(a) 9 π (b) 16 π (c) 25 π (d) 49 π