SOLUTION FOR HOME ASSIGNMENT- 1(Algebra and Trigonometry)

CLASS & SECTION:XI SUBJECT: PHYSICS (Code : 042)

1. Reduce the following to the sine of one angle:

   sin7t cos3t – cos7t sin3t

   ANS: This is of the form, $\sin(A - B) = \sin A \cos B - \cos A \sin B$

   Therefore the solution for sin7t cos3t – cos7t sin3t = sin 4t

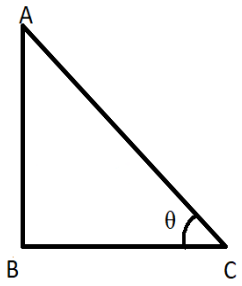
2. Reduce the following to the cosine of one angle:

   Cos 71°cos 33° - sin 71°sin 33°

   ANS: This is of the form, $\cos(A - B) = \cos A \cos B - \sin A \sin B$

   Therefore the solution for Cos 71°cos 33° - sin 71°sin 33° = cos 38°

3. For the given right angled triangle, find the sine, cosine and tangent values if the length of side AB=12 cm; BC= 5cm; AC= 13cm.



   ANS: $\sin\theta = \frac{12}{13}$ $\cos\theta = \frac{5}{13}$ $\tan\theta = \frac{12}{5}$

4. In the given right angled triangle if the angle θ=60°, find the length(in cm)of the opposite side, adjacent side and hypotenuse.

   ANS: $\sin 60^0 = \frac{\sqrt{3}}{2} = \frac{\text{opposite side}}{\text{hypotenuse}}$ $\cos 60^0 = \frac{1}{2} = \frac{\text{adjacent side}}{\text{hypotenuse}}$

   opposite side=√3 cm; adjacent side=1 cm; hypotenuse=2cm.

5. In the given right angled triangle if the value of sinθ=15/17, find the length of the opposite side, adjacent side and hypotenuse.

   ANS: sinθ=15/17

   opposite side=15 cm hypotenuse= 17cm

$$AC^2 = AB^2 + BC^2$$

$$BC^2 = AC^2 - AB^2$$

$BC^2=64$

BC=8cm

(Same diagram to be referred for Questions 3,4 &5)

6. Find the value of x in (i) $x^2 + 3x - 4 = 0$ (ii) $2x^2 - 4x - 3 = 0$

ANS: (i) values of x are 1 or -4 (ii) values of x are $\frac{4\pm\sqrt{40}}{4}$

7. Solve (i) $(2-x)^3$ (ii) $x^3+ (2x)^3$

ANS: (i) $(2-x)^3 =8-x^3-6x(2-x)= 8-x^3-12x+6x^2$

(ii) $x^3+ (2x)^3=3x(x^2 -2 x^2+ x^2)= 3x(3x^2)=9x^3$

8. Expand binomially: (i) $(1+x)^4$ (ii) $(1-x)^{-2}$

ANS: (i) $(1+x)^4 = 1 + 4x\ldots$

(ii) $(1-x)^{-2}= 1+2x\ldots$