ALGEBRA

1. What is the area of a semi-circle of diameter $'d'$?

   (a) $\frac{1}{16}\pi d^2$

   (b) $\frac{1}{4}\pi d^2$

   (c) $\frac{1}{8}\pi d^2$

   (d) $\frac{1}{2}\pi d^2$

2. if one zero of the polynomial

$$p(x) = 6x^2 + 37x - (k - 2) \tag{1}$$

   is reciprocal of the other, then what is the value of k?

   (a) -4

   (b) -6

   (c) 6

   (d) 4

3. The zeroes of the polynomial

$$p(x) = x^2 + 4x + 3 \tag{2}$$

   are given by:

   (a) $1, 3$

   (b) $-1, 3$

   (c) $1, -3$

   (d) $-1, -3$

4. $sin\theta + cos\theta = \sqrt{3}$, then find the value of $sin\theta.cos\theta$.

5. if $sin\alpha = \frac{1}{\sqrt{2}}$ and $cot\beta = \sqrt{3}$, then find the value of $cosec\alpha + cosec\beta$.

6. Prove that:

$$\frac{tan\theta + sec\theta - 1}{tan\theta - sec\theta + 1} = \frac{1 + sin\theta}{cos\theta} \tag{3}$$

7. While designing the school year book, a teacher asked the student that the length and width of a particular photo is increased by x units each to double the area of the photo. The original photo is $18cm$ long and $12cm$ wide.refer the given Figure 1 Based on the above information, answer the following questions:

   (a) Write an algebraic equation depicting the above information.

   (b) Write the corresponding quadratic equation in standard form.

   (c) What should be the new dimensions of the enlarged photo?

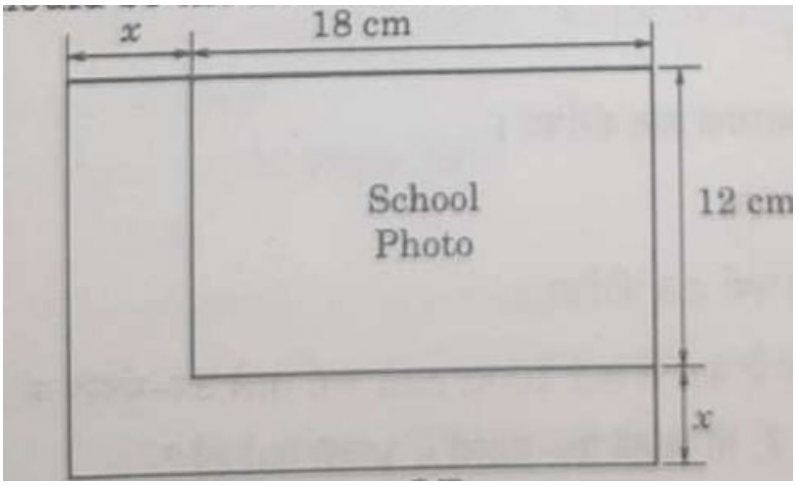

Figure 1

8. Can any rational value of x make the new area equal to $220cm^2$?