Cosmo School

Work Sheet – 05 (Higher Mathematics) for class – Ten (19.10.2020), Chapter- Six Exercise - 6.3, Inequality

Creative Questions:

1. (i) $y^x = 9$ and $y^2 = 3^x$
(ii) $P = a(x + 4)$ [Dj.B.- 19]

a) Find the solution set of $\sqrt{7x+1} + 10 = 2$.
b) Find the solution of the pair of equations given in (i) in the stem.
c) Determine the solution of the inequality $P > d, a \neq 0$.

2. $f(x) = x^2 - 6x + 15$ and $g(x) = x^2 - 6x + 13$ are two functions and $3x - 2y \leq 12$ is an inequality.

a) If f(x) = 14 then find the value of x.
b) If $\sqrt{f(y)} - \sqrt{g(y)} = \sqrt{10} - \sqrt{8}$ then solve it.
c) Draw the graph of above inequality.

3. The air distance of the Singapore airport from the Hazrat Shahjalal airport is 2900 km. The maximum speed of the Bangladesh Biman is 500 km/hour. But on the way from the Hazrat Shahjalal airport, it faces air flowing at 60 km/hour from the opposite direction.

a) Express the problem of stimulus in terms of an inequality taking the required time as t hours.
b) Find the required time of non-stop flying from the Hazrat Shahjalal airport to the Singapore airport using the inequality in 10(1) and show it on a number line.
c) Take x as time of returning from the Singapore airport to the Hazrat Shahjalal airport and then express the problem in the form of an inequality and solve it graphically.

4. Between two numbers, the result of subtraction of 5 times of the second number from 3 times of the first one is greater than 5. Again, when 3 times of the second number is subtracted from the first one, the result is not more than 9.

a) Express the conditions stated by stimulus in the form of inequalities.
b) If 5 times of the first number is less than the sum of twice the first number and 15 then express the possible values of the number in the form of an inequality.
c) Draw the graph of each pair of inequalities obtained in (a).

5. If 7 added with the numerator of a fraction, the fraction will be equal or greater than 2. Again, if 2 is subtracted from the denominator the fraction will equal or greater than 1.

a) Express the fraction by inequality taking as $\frac{x}{y}$.
b) Find the fraction for the lowest value of numerator and denominator.
c) Draw the graph and locate the solution area.