**Inequalities 2**

**1.** Solve

Since for all

The given inequality is reduced to

and

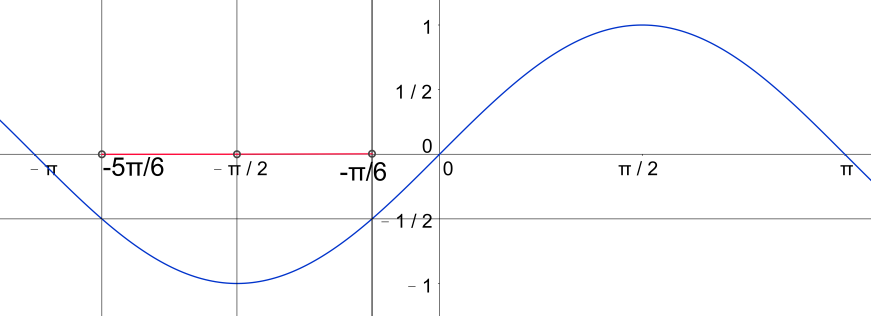
Therefore for ,

or or or

Since , the complete solution is

or .

**2.** Solve for , where .



If ,

the roots of is

and are

∴ The solution is .

**3.** If , use A.M. G.M., or otherwise, show that

.

**Method 1**

(A.M. G.M)

(A.M. G.M)

**Method 2**

By CBS inequality (Cauchy – Bunyakovskii – Schwarz inequality)

Equality holds

(Given : )

**4.** If and , show that .

Find the condition for the equality.

**Method 1**

Use CBS inequality (Cauchy – Bunyakovskii – Schwarz inequality) for the set

Therefore, .

Equality holds

**Method 2**

Equality holds

**5.** Given that are real numbers and

find the maximum value of .

**Method 1**

By CBS inequality,

, hence the maximum of is 3.

**Method 2**

Hence,

, hence the maximum of is 3.

**6.** Solve

Obviously, .

**(a)** If , then

But , therefore

**(b)** If , then

For ,

Therefore, for all x.

The inequality become

Solving,

But ,

Therefore

Joining (a) and (b), .

**Yue Kwok Choy**

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