**Question: -**

The set of all real numbers a such that $a^2 + 2a, 2a + 3$ and $a^2 + 3a + 8$ are the sides of a triangle is ......

**(1985, 2M)**

**Solution**: -

Since, $a^2+2a, 2a+3$ and $a^2+3a+8$ form sides of a triangle.

Now, $a^2+3a+8<(a^2+2a)+(2a+3)$

$\Rightarrow \quad a^2+3a+8<a^2+4a+3$

$\Rightarrow \quad a>5$ ...(i)

Also, $(a^2+3a+8)+(2a+3)>a^2+2a$

$\Rightarrow \quad 3a>-11$

$\Rightarrow \quad a>-\frac{11}{3}$ ...(ii)

Again, $(a^2+3a+8)+(a^2+2a)>2a+3$

$\Rightarrow \quad 2a^2+3a+5>0$

which is always true.

$\therefore$ Triangle is formed, if $a>5$