STD – 9 MATHS

CHAPTER - 1

NUMBER SYSTEM

EXERCISE - 1.5 (Q.2 to 3)

Q.2. Simplify each of the following expressions :

(i) $(3 + \sqrt{3})(2 + \sqrt{2})$

$= (3 + \sqrt{3})(2 + \sqrt{2})$

$= 3\ (2 + \sqrt{2}) + \sqrt{3}(2 + \sqrt{2})$

= Opening the brackets, we get, $3 \times 2 + (3 \times \sqrt{2}) + (\sqrt{3} \times 2) + (\sqrt{3} \times \sqrt{2})$

$= 6 + 3\sqrt{2} + 2\sqrt{3} + \sqrt{6}$

(ii) $(3 + \sqrt{3})(3 - \sqrt{3})$

= Using identity $(a + b)(a - b) = a^2 - b^2$

$a = 3 \quad b = \sqrt{3}$

$= [\,(3)^2 - (\sqrt{3})^2\,]$

$= 9 - 3$

$= 6$

(iii) $(\sqrt{5} + \sqrt{2})$

= Using identity $(a + b)^2$

= $a^2 + 2ab + b^2$

a = $\sqrt{5}$ b = $\sqrt{2}$

= $(\sqrt{5})^2 + 2(\sqrt{2})(\sqrt{5}) + (\sqrt{2})^2$

= $5 + 2\sqrt{10} + 2$

= $7 + 2\sqrt{10}$

(iv) $(\sqrt{5} - \sqrt{2})(\sqrt{5} + \sqrt{2})$

= Using identity (a + b) (a - b)

= $a^2 - b^2$

a = $\sqrt{5}$ b = $\sqrt{2}$

= [$(\sqrt{5})^2 - (\sqrt{2})^2$]

= (5 - 2)

= 3

Q.3. Recall, π is defined as the ratio of the circumference (say c) of a circle to its diameter (say d). That is, $\pi = \frac{c}{d}$.

This seems to contradict the fact that π is irrational.

How will you resolve this contradiction?

- **There is no contradiction.**

When we measure a value with a scale, we only obtain an approximate value.

We never obtain an exact value.

Therefore, we may not realize whether c or d is irrational.

The value of π is almost equal to $\frac{22}{7}$ or 3.142857...

Thanks

For watching