NAME : Shraboni Goswami

ID: 221-15-5929

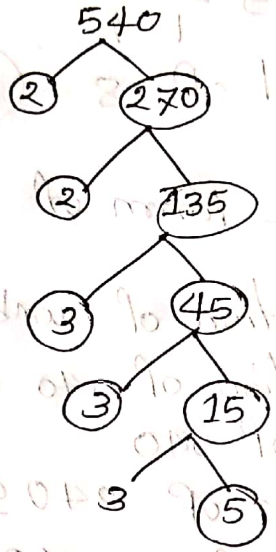
২নং প্রশ্নের উত্তর:

(2)

Division method

$$\begin{array}{r|l} 2 & 540 \\ \hline 2 & 270 \\ \hline 2 & 135 \\ \hline 2 & 45 \\ \hline 3 & 15 \\ \hline & 5 \end{array}$$

Three Digream



Multiplication Method

$540 = 2 \times 270$

$= 2 \times 2 \times 135$

$= 2^2 \times 3 \times 45$

$= 2^2 \times 3^2 \times 15$

$= 2^2 \times 3^3 \times 5$

Ans to the question no-(3)

$540 = 1 \times 540$

$= 2 \times 270$

$= 3 \times 180$

$= 4 \times 135$

$= 5 \times 108$

$= 6 \times 90$

$= 9 \times 60$

$= 10 \times 54$

$= 12 \times 45$

$= 15 \times 36$

$= 18 \times 30$

$= 20 \times 27$

$= 30 \times 18$

$= 36 \times 15$

The prime factors are:

(1, 2, 3, 4, 5, 6, 9, 10, 12, 15, 18, 20, 30, 36, 45, 54, 60, 90, 108, 135, ~~108~~ 180, 270, 540) Ans

Ans to the question no - 4

4

$240 = 2 \times 120$

$= 2 \times 2 \times 2 \times 30$

$= 2^4 \times 3 \times 5$

$140 = 2 \times 70$

$= 2 \times 2 \times 35$

$= 2^2 \times 5 \times 7$

$\therefore L.C.M(240, 140) = 2^4 . 3 . 5 . 7$

$= 1680$

$G.C.D(240, 140) = 2^2 . 5$

$= 4 \cdot 5 = 20$

Ans to the question no - 5

5

$42 = 2 \times 21 = 2 \cdot 3 \cdot 7$

$63 = 3 \times 21 = 3 \cdot 3 \times 7 = 3^2 . 7$

$140 = 2 \times 70 = 2 \cdot 2 \cdot 5 \cdot 7 = 2^2 . 5 . 7$

$\therefore LCM(42, 63, 140) = 2^2 . 3^2 . 5 . 7 = 1260$

$\therefore HCF(42, 63, 140) = 7$

Ans to the question no - 6

6 $\frac{2}{3}, \frac{8}{9}, \frac{16}{81}$ and $\frac{10}{27}$

$\therefore$ Calculation for number:

$2 = 2^1$

$8 = 2^3$

$16 = 2^4$

$10 = 2 \cdot 5$

$\therefore LCM = 2^4 . 5$

$GCD = 2$

Calculation of Denominators:

$3 = 3^1$

$9 = 3^2$

$81 = 3^4$

$27 = 3^3$

$\therefore LCM = 3^4$

$GCD = 3$

$\therefore$ LCM of $\frac{2}{3}, \frac{8}{9}, \frac{16}{81}$ and $\frac{10}{27} = \frac{\text{LCM of } (2, 8, 16, 10)}{\text{GCD of } (3, 9, 81, 27)}$

$= \frac{2^4 \cdot 5}{3}$ Ans:

and,

HCF of $\frac{2}{3}, \frac{8}{9}, \frac{16}{81}$ and $\frac{10}{27} = \frac{\text{~~LCM~~ GCD of } (2, 8, 16, 10)}{\text{LCM of } (3, 9, 81, 27)}$

$= \frac{2}{3^4}$ Ans

Ans to the question no — ~~8~~ 7

$$z = \frac{1+\sqrt{3}i}{1-\sqrt{3}i}$$

Notation $= |z|$

Rule $|z| = \sqrt{x^2+y^2}$

Suppose,

$z_1 = 1+\sqrt{3}i$ and $z_2 = 1-\sqrt{3}i$

$\therefore |z_1| = \sqrt{(1)^2+(\sqrt{3})^2} = \sqrt{4} = 2$

$|z_2| = \sqrt{(1)^2+(-\sqrt{3})^2} = \sqrt{4} = 2$

$\therefore$ Modulas of $|z| = \frac{2}{2} = 1$ Ans

And

z_1's Argument is $\theta_1 = \tan^{-1}\frac{y}{x}$

$= \tan^{-1}\sqrt{3}$

$= 60^\circ$

z_2's Argument is $\theta_2 = \cancel{\tan^{-1}}\ 360^\circ - \tan^{-1}\frac{y}{x}$

$= 360^\circ - \tan^{-1}\sqrt{3}$

$= 300^\circ$