



SUMMER HOLIDAY HOME-WORK (Class IX)

1. Simplify (i) $(3\sqrt{5} - 5\sqrt{2})(4\sqrt{5} + 3\sqrt{2})$ (ii) $\sqrt[4]{81} - 8\sqrt[3]{216} + 15\sqrt{32} + \sqrt{225}$.
 (iii) $\frac{9^{\frac{1}{3}} \times 27^{\frac{-1}{2}}}{3^{\frac{1}{6}} \times 3^{\frac{-2}{3}}}$ (iv) $[5(8^{1/3} + 27^{1/3})^3]^{1/4}$.
2. Find the value of x if, $\left(\frac{3}{4}\right)^3 \times \left(\frac{4}{3}\right)^{-7} = \left(\frac{3}{4}\right)^{2x}$.
3. Find the value of a and b, if $\frac{7+3\sqrt{5}}{3+\sqrt{5}} + \frac{7-3\sqrt{5}}{3-\sqrt{5}} = a+b\sqrt{5}$.
4. Express each of the following in the form of p/q .
 (i) $0.\overline{585}$ (ii) $23.\overline{43}$ (iii) $15.\overline{712}$ (iv) $0.1\overline{23}$
5. (iii) If $a = 1 - \sqrt{2}$, find the value of $\left(a - \frac{1}{a}\right)^3$.
6. Find the value of k, if $(x-1)$ is a factor of $4x^3 + 3x^2 - 4x + k$.
7. If the polynomials $az^3 + 4z^2 + 3z - 4$ and $z^3 - 4z + a$ leave the same remainder when divided by $z-3$, find a.
8. without finding the cubes, factorize $(x-2y)^3 + (2y-3z)^3 + (3z-x)^3$.
9. If a, b, c are all non zero and $a + b + c = 0$, prove that $\frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab} = 3$.
10. Factorise the following polynomial:
 (i) $y^3 - 7y + 6$ (ii) $x^3 - 6x^2 + 11x - 6$.
 (iii) $9x^2 + 6x + 1 - 25y^2$ (iv) $x^6 - 64$.
 (v) $9x^2 + 4y^2 + 16z^2 + 12xy - 16yz - 24xz$ (vi) $2x^2 + y^2 + 8z^2 - 2\sqrt{2}xy + 4\sqrt{2}yz - 8xz$.
11. On which axes do the given points lie?
 A) (0, 4) B) (-2, 0) C) (3, 0) D) (0, -1)
12. A point lies on x-axis at a distance of 9 units from y-axis. What are its coordinates / what will be its coordinates if it lies on y-axis at a distance of -9 units from x-axis.
13. Plot the points A (1, 3), B (1, -1), C (7, -1) and D (7, 3) in Cartesian plane. Join them in order and name the figure so formed.
14. Plot the points(x, y) given in the following table on the plane choosing suitable units of distance on the axes.
- | | | | | | |
|---|----|----|-------|---|----|
| x | -2 | -1 | 0 | 1 | 3 |
| y | 8 | 7 | -1.25 | 3 | -1 |
15. Plot the point P (2, -6) on graph paper and from it draw PM and PN as perpendiculars to x-axis and y-axis respectively. Write the coordinates of the points M and N.

