

AIR FORCE SCHOOL, JAMMU

SESSION 2019-20 (class 1x)

ASSIGNMENT (HOLIDAY H.W.)

CLASS IX

Q1. Simplify: $\frac{6}{2\sqrt{3}-\sqrt{6}} + \frac{\sqrt{6}}{\sqrt{3}+\sqrt{2}} - \frac{4\sqrt{3}}{\sqrt{6}-\sqrt{2}}$.

Q2. Express $2.36 + 0.23$ as a fraction in the simplest form.

Q3. Find the remainder when $P(x) = x^3 + 4x^2 - 3x + 10$ is divided by $(x+4)$, by using remainder theorem and verify the result by actual division.

Q4. Find the value of K if the polynomial $P(x) = Kx^3 + 9x^2 + 4x - 10$ is divided by $(x-3)$ leaves a remainder -22 .

Q5. The polynomial $f(x) = x^3 + px^2 + qx + 6$, when divided by $(x-3)$ leaves remainder 3 and when divided by $(x-2)$ leaves zero as remainder. Find the values of p and q .

Q6. State and prove Factor Theorem.

Q7. Show that $(x-\sqrt{2})$ is a factor of $7x^2 - 2\sqrt{8}x - 6$.

Q8. Using Factor theorem, verify that $(x+a)$ is a factor of $x^n + a^n$ for any odd positive integer.

Q9. What must be added to $x^3 - 3x^2 - 12x + 19$ so that the result is exactly divisible by $x^2 + x - 6$?

Q10. Using factor theorem, show that $x-y$, $y-z$, $z-x$ are the factors of $x(y^2 - z^2) + y(z^2 - x^2) + z(x^2 - y^2)$.

Q11. If $x - \frac{1}{x} = -2$, find the value of $x^2 + \frac{1}{x^2}$.

Q12. If $9x^2 + 25y^2 = 181$ and $xy = -6$, find the value of $3x + 5y$.

Q13. Prove that if two lines intersect each other at point O , then the vertically opposite angles are equal.

Q14. Plot the following points and check whether they are collinear or not:

$(1,3)$; $(-1,-1)$; $(-2,-3)$.

Q15. Factorise:

(a) $(a-2b)^3 + (2b-3c)^3 + (3c-a)^3$.

(b) $(3p-q)^3 + (q+2r)^3 - (2r+3p)^3$.

(c) $(x-a)^3 + (x-b)^3 + (x-c)^3$ where $x = \frac{a+b+c}{3}$.