

Maths Work Sheet

Class - IX

Chapter:- Polynomials

Q01 :} Factorize the following by splitting the middle term:

- a) $3x^2 + 19x + 30$
- b) $2\sqrt{2}x^2 + 9x + 5\sqrt{2}$
- c) $4x^2 - 13x + 10$

Q02 :} Factorize the following by Factor theorem:

- a) $x^3 + 9x^2 + 23x + 15$
- b) $x^3 + 6x^2 + 11x + 6$

Q03 :} Factorize the following by using a suitable identity:

- a) $4x^2 + 12xy + 9y^2$
- b) $2a^5 - 54a^2$
- c) $2\sqrt{2}x^3 + 3\sqrt{3}y^3$
- d) $x^5 - x$
- e) $x^6 - y^6$
- f) $(a - b)^3 + (b - c)^3 + (c - a)^3$
- g) $x^8 - y^8$
- h) $27x^3 - 135x^2 + 225x - 125$

Q04 :} Evaluate the following using a suitable identity:

- a) 998^3
- b) 10.2^3
- c) $998^2 - 4$
- d) $999^2 - 1$
- e) $(-25)^3 + 10^3 + 15^3$
- f) 10.2×9.8

Q05 :} If 5 is a zero of $x^3 + kx^2 + 2x + 8$, find k.

Q06 :} If $(x - 2)$ is a zero of $x^3 - 4x^2 + kx - 8$, find k.

Q07 :} If $(x - 2)$ and $(x + 3)$ are factors of $x^3 + ax^2 + bx - 30$, find a and b.

Q08 : If $x + y + z = 8$ and $xy + yz + zx = 20$, find the value of $x^3 + y^3 + z^3 - 3xyz$.

Q09 : If $a + b + c = 9$ and $a^2 + b^2 + c^2 = 35$, find the value of $a^3 + b^3 + c^3 - 3abc$.

Q10 : Find the value of $2.7^3 - 1.6^3 - 1.1^3$ using a suitable identity.

Q11 : Factorize the following by using a suitable identity:

a) $a^3 + b^3 - 8c^3 + 6abc$

b) $\left(\frac{a}{b}\right)^3 + \left(\frac{b}{c}\right)^3 + \left(\frac{c}{a}\right)^3 - 3$

c) $8x^3 - 27y^3 + 125z^3 + 90xyz$

Q12 : Find the value of $a^3 + 8b^3$, if $a + 2b = 10$ and $ab = 15$.

Q13 : Find the value of $a^3 + 27b^3$, if $a - 2b = (-6)$ and $ab = (-10)$.

Q14 : Find the value of m and n if $y^2 - 1$ is a factor of $y^4 + my^3 + 2y^2 - 3y + n$.

Q15 : $(x + 2)$ is a factor of $mx^3 + nx^2 + x - 6$. It leaves the remainder 4 when divided by $(x - 2)$. Find m and n.

Q16 : The polynomials $kx^3 + 3x^2 - 3$ and $2x^3 - 5x + k$ leave the same remainder when divided by $(x - 4)$. Find k.

Q17 : Factorize: $x^3 + \frac{1}{x^3} - 2$.

Q18 : If $ab + bc + ca = 10$ and $a^2 + b^2 + c^2 = 44$, find $a^3 + b^3 + c^3 - 3abc$.

Q19 : Show that $x - 2$ is a factor $p(x) = x^3 - 12x^2 + 44x - 48$.

Q20 : Factorize $x^3 - 2x^2 - 5x + 6$.

Q21 : If $x + p$ is a factor of $p(x) = x^5 - p^2x^3 + 44x - 48$.

Q22 : Factorize:

a) $a^2 + \frac{1}{a^2} + 2$

b) $3(x + 2)^2 + 17(x + 2) + 10$

c) $4x^2 - 9y^2 + 20x + 25.$