

WORK SHEET

CLASS: IX

Polynomials

Q.1 Factorize the following by splitting the middle term:

(a) $3x^2 + 11x + 30$ (b) $2\sqrt{2}x^2 + 9x + 5\sqrt{2}$ (c) $4x^2 - 13x + 10$

Q.2 Factorize the following by Factor theorem:

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

Q.3 Factorize the following by using a suitable identity:

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

(g) $27x^3 - 135x^2 + 225x - 125$

Q.4 Evaluate the following using a suitable identity:

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

Q.5 If 5 is a zero of $x^3 + kx^2 + 2x + 8$ find k.

Q.6 If $(x-2)$ is a zero of $x^3 - 4x^2 + kx - 8$ find k.

Q.7 If $(x-2)$ and $(x+3)$ are factors of $x^3 + ax^2 + bx - 30$, find a and b.

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

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

Q.10 Find the value of $2.7^3 - 1.6^3 - 1.1^3$ using a suitable identity.

Q.11 Factorize the following by using a suitable identity:

(a) $a^3 + b^3 - 8c^3 + 6abc$ (b) $(a/b)^3 + (b/c)^3 + (c/a)^3 - 3$ (c) $8x^3 - 27y^3 + 125z^3 + 90xyz$

Q.12 Find the value of $a^3 + 8b^3$ if $a + 2b = 10$ and $ab = 15$.

Q.13 Find the value of $a^3 - 27b^3$ if $a - 3b = (-6)$ and $ab = (-10)$.

Q.14 Find the values of m and n if $y^2 - 1$ is a factor of $y^4 + my^3 + 2y^2 - 3y + n$.

Q.15 $(x+2)$ is a factor of $mx^3 + nx^2 + x - 6$. It leaves the remainder 4 when divided by $(x-2)$. Find m and n.

Q.16 The polynomials $kx^3 + 3x^2 - 3$ and $2x^3 - 5x + k$ leave the same remainder when divided by $(x-4)$. Find k.

Q.17 Factorize: $x^3 + 1/x^3 - 2$

Q.18 If $ab + bc + ca = 10$ and $a^2 + b^2 + c^2 = 44$ find $a^3 + b^3 + c^3 - 3abc$.

Q.19 Show that $x-2$ is a factor $p(x) = x^3 - 12x^2 + 44x - 48$

Q.20 Factorize $x^3 - 2x^2 - 5x + 6$

Q.21 If $x+p$ is a factor of $p(x) = x^5 - p^2x^3 + 2x + p + 1$ find the value of p

Q.22 Factorize: (a) $a^2 + 1/a^2 + 2$ (b) $3(x+2)^2 + 17(x+2) + 10$ (c) $4x^2 - 9y^2 + 20x + 25$