



DR. VIRENDRA SWARUP PUBLIC SCHOOL, KALYANPUR

Revision Worksheet

Class IX Session: 2021-2022

Chapter: Polynomials

- Factorize the following: $9x^2 + 6x + 1 - 25y^2$.
- Factorize the following: $a^2 + b^2 + 2ab + 2bc + 2ca$
- Show that $p(x) = x^3 - 3x^2 + 2x - 6$ has only one real zero.
- Find the value of a if $x + 6$ is a factor of $x^3 + 3x^2 + 4x + a$.
- If polynomials $ax^3 + 3x^2 - 3$ and $2x^3 - 5x + a$ leaves the same remainder when each is divided by $x - 4$, find the value of a .
- The polynomial $f(x) = x^4 - 2x^3 + 3x^2 - ax + b$ when divided by $(x - 1)$ and $(x + 1)$ leaves the remainders 5 and 19 respectively. Find the values of a and b . Hence, find the remainder when $f(x)$ is divided by $(x - 2)$.
- If the polynomials $2x^3 + ax^2 + 3x - 5$ and $x^3 + x^2 - 2x + a$ leave the same remainder when divided by $(x - 2)$, find the value of a . Also, find the remainder in each case.
- If the polynomials $az^3 + 4z^2 + 3z - 4$ and $z^3 - 4z + a$ leave the same remainder when divided by $z - 3$, find the value of a .
- The polynomial $p(x) = x^4 - 2x^3 + 3x^2 - ax + 3a - 7$ when divided by $x + 1$ leaves the remainder 19. Find the values of a . Also find the remainder when $p(x)$ is divided by $x + 2$.
- Without actual division, prove that $2x^4 - 5x^3 + 2x^2 - x + 2$ is divisible by $x^2 - 3x + 2$.
- Simplify $(2x - 5y)^3 - (2x + 5y)^3$.
- Multiply $x^2 + 4y^2 + z^2 + 2xy + xz - 2yz$ by $(-z + x - 2y)$.
- If $a + b + c = 5$ and $ab + bc + ca = 10$, then prove that $a^3 + b^3 + c^3 - 3abc = -25$.
- Without actual division, prove that $2x^4 - 6x^3 + 3x^2 + 3x - 2$ is exactly divisible by $x^2 - 3x + 2$.
- Without actual division, prove that $x^3 - 3x^2 - 13x + 15$ is exactly divisible by $x^2 + 2x - 3$.
- Find the values of a and b so that the polynomial $x^3 - 10x^2 + ax + b$ is exactly divisible by $(x - 1)$ as well as $(x - 2)$.
- Find the integral zeroes of the polynomial $2x^3 + 5x^2 - 5x - 2$.
- Find the values of a and b so that the polynomial $x^4 + ax^3 - 7x^2 + 8x + b$ is exactly divisible by $(x + 2)$ as well as $(x + 3)$.
- If $x^3 + ax^2 + bx + 6$ has $(x - 2)$ as a factor and leaves a remainder 3 when divided by $(x - 3)$, find the values of a and b .
- Find the value of $x^3 + y^3 + 15xy - 125$ if $x + y = 5$.
- Without actually calculating, find the value of $(25)^3 - (75)^3 + (50)^3$.
- Factorize each of the following cubic expressions:
 - $8x^3 - y - 12x^2y + 6xy^2$
 - $27q^3 - 125p^3 - 135q^2p + 225qp^2$
- Factorize:
 - $x^3 + 216y^3 + 8z^3 - 36xyz$
 - $a^3 - 64b^3 - 27c^3 - 36abc$
 - $8x^3 + 729 + 108x^2 + 486x$
- Give one example each of a binomial of degree 35, and of a monomial of degree 100.
- Find a zero of the polynomial $p(x) = 2x + 1$.
- Verify whether 2 and 0 are zeroes of the polynomial $x^2 - 2x$.
- Find the zero of the polynomials in each of the following cases:
 - $p(x) = x + 5$
 - $p(x) = x - 5$
 - $p(x) = 2x + 5$
 - $p(x) = 3x - 2$
 - $p(x) = 3x$
 - $p(x) = ax, a \neq 0$
- Divide $p(x)$ by $g(x)$, where $p(x) = x + 3x^2 - 1$ and $g(x) = 1 + x$.
- Divide the polynomial $3x^4 - 4x^3 - 3x - 1$ by $x - 1$.
- Find the remainder obtained on dividing $p(x) = x^3 + 1$ by $x + 1$.
- Find the remainder when $x^4 + x^3 - 2x^2 + x + 1$ is divided by $x - 1$.
- Check whether the polynomial $q(t) = 4t^3 + 4t^2 - t - 1$ is a multiple of $2t + 1$.
- Check whether $p(x)$ is a multiple of $g(x)$ or not, where $p(x) = x^3 - x + 1$, $g(x) = 2 - 3x$.
- Find the remainder when $x^3 - ax^2 + 6x - a$ is divided by $x - a$.
- Examine whether $x + 2$ is a factor of $x^3 + 3x^2 + 5x + 6$ and of $2x + 4$.
- Find the value of k , if $x - 1$ is a factor of $4x^3 + 3x^2 - 4x + k$.
- Find the value of a , if $x - a$ is a factor of $x^3 - ax^2 + 2x + a - 1$.
- Factorize $6x^2 + 17x + 5$
- Factorize $y^2 - 5y + 6$
- Factorize $x^3 - 23x^2 + 142x - 120$.
- Factorize:
 - $x^3 - 2x^2 - x + 2$
 - $x^3 - 3x^2 - 9x - 5$
 - $x^3 + 13x^2 + 32x + 20$
 - $2y^3 + y^2 - 2y - 1$
- Factorize: $4x^2 + 9y^2 + 16z^2 + 12xy - 24yz - 16xz$
- Expand $(4a - 2b - 3c)^2$.
- Factorize $4x^2 + y^2 + z^2 - 4xy - 2yz + 4xz$.
- If $x + 1$ is a factor of $ax^3 + x^2 - 2x + 4a - 9$, find the value of a .

