

GRADE 9

POLYNOMIALS

- 1) If $\frac{1}{2}$ is a zero of polynomial $p(x) = 2x^4 - ax^3 + 4x^2 + 2x + 1$, find the value of a .
- 2) If 1 and -1 are zeros of polynomial $p(x) = ax^3 + x^2 - 2x + b$, find the value of a and b .
- 3) Using remainder theorem, show that the polynomial $x^3 - 2x^2 + 3x - 18$ is multiple of $x - 3$.
- 4) Find the value of a , if the polynomials $ax^3 + 3x^2 - 3$ and $2x^3 - 5x + a$ when divided by $x - 4$, leave the same remainder.
- 5) If both $(x+1)$ and $(x-2)$ are factors of the polynomial $p(x) = 3x^3 + ax^2 + bx - 8$, find the value of a and b .
- 6) If $f(x) = x^3 + mx^2 + nx + 6$ has $(x-2)$ as a factor and leaves a remainder 3, when divided by $(x-3)$, find the value of m and n .
- 7) If $ax^3 + bx + x - 6$ has $(x+2)$ as a factor and leaves remainder 4, when divided by $(x-2)$. Then find the values of a and b .
- 8) Simplify by using identities :-

a) $212 \times 212 - 2 \times 12 \times 212 + 12 \times 12$	b. 105×98
b) 105×98	c. $(0.98)^2$
	e. $\frac{3.7 \times 3.7 - 2.9 \times 2.9}{0.8}$
- 9) If $x + \frac{1}{x} = 2$, find the value of $x^2 + \frac{1}{x^2}$
- 10) If $x - \frac{1}{x} = 4$, find the value of $x^2 + \frac{1}{x^2}$
- 11) If $x^2 + \frac{1}{x^2} = 83$, find the value of $x - \frac{1}{x}$
- 12) Show by long division that $2x + 3$ is a factor of $p(x) = 4x^4 + 8x^3 + 5x^2 + x - 3$.
- 13) If $a - b = 7$ and $a^2 + b^2 = 85$, find $a^3 - b^3$.
- 14) If $4x^2 + 9y^2 = 69$ and $xy = 1$, find the value of $2x + 3y$
- 15) If $x - \frac{1}{x} = 4$, find the value of $x^3 - \frac{1}{x^3}$
- 16) If $x + y + z = 9$ and $x^2 + y^2 + z^2 = 35$, find the value of $x^3 + y^3 + z^3 - 3xyz$
- 17) Without actually calculating the cubes, evaluate
 $(\frac{1}{4})^3 + (\frac{1}{3})^3 - (\frac{7}{12})^3$
- 18) $x - y = 10/9$ and $xy = 5/3$, find the value of $x^3 - y^3$
- 19) Find the value of $(x-a)^3 + (x-b)^3 + (x-c)^3 - 3(x-a)(x-b)(x-c)$, if $a + b + c = 3x$
- 20) Factorise
 - a) $x^2 + 9x - 52$
 - b) $x^3 - 8x^2 + x + 42$
- 21) What is the degree of zero polynomial.

