



SEKOLAH BUKIT SION

AY 2021-2022

CHAPTER 4 POLYNOMIALS

NAME: _____ CLASS: _____ DATE: _____

1. **Choose only one.**

Use the long division to find the quotient and remainder when $P(x)$ is divided by $f(x)$.

(a) $P(x) = x^4 - 10x^3 + x - 8$
 $f(x) = x - 10$

(b) $P(x) = 2x^3 + 3x^2 - 9x - 2$
 $f(x) = x^2 + 2$

2. Given that $6x^3 + 6x^2 - 16x + 11 = Ax(x - 1)(x + 2) + B(x - 1) + C$ for all values of x , find the values of A , B and C .

3. Find the value of a when $f(x) = x^3 - ax^2 + 3x + 2$ is divided by its factor $(x - 1)$. Hence, find the remainder when $f(x)$ is divided by $(x + 5)$.

4. Given that $P(x) = 3x^4 + px^3 + 2x^2 - 7x - q$.
It is also that $P(-2) = 66$ and $P(2) = 54$.
Calculate $p^3 + q^3$.

5. Given that $(x^2 + 2x - 3)$ is a factor of $P(x) = 2x^3 + kx^2 + mx - 3$, find the k and m .

6. Given that $f(x) = x^3 + 2x^2 + kx + 1$ is divided by $(x - 2)$, the remainder is $3k$.
Find the possible value of k .

7. The remainder of $2x^3 + 5x^2 + 4x + k$ when divided by $(x - 1)$ is equal to the remainder of $x^3 - kx + 7$ when divided by $(x + 2)$.

8. Given that $a(x - 3)(x - 1) + b(x + 1)(x - 1) + c(x + 1)(x - 3)$ simplifies to $6x - 10$.

- (a) Show that $a + b + c = 0$.
- (b) By substitution/elimination methods, find the values of a , b and c .

9.

- (a) Solve the equation $2x^3 - 3x^2 = 11x - 6$.
- (b) Sketch the graph of $f(x) = 2x^3 - 3x^2 - 11x + 6$, carefully indicating all intercepts.
- (c) Write down and show the number of solutions of $|2x^3 - 3x^2 - 11x + 6| = 6$.

10. Given that $(x - p)$ is a factor of $f(x) = 4x^3 - (3p + 2)x^2 - (p^2 - 1)x + 3$.

- (a) Find the values of p .
- (b) If $p < 0$, show that $f(x)$ has only one real root when $f(x) = 0$.