

QUIZEN – Polynomial(9M02)

| Learning Level 1 | Learning Level 2 | Learning Level 3 |
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| Q - Remembering (knowledge-based questions) U - Understanding (comprehension-based questions) | I - Applying (application-based questions) Z - Analyzing (analysis-based questions) | E - Evaluating (evaluation-based questions) N - Creating (creation-based questions) |

Learning Level 1

1. State the Remainder Theorem for a polynomial function $f(x)$.
2. Define the Factor Theorem for a polynomial function $f(x)$.
3. What is the degree of a polynomial function?
4. Can a polynomial function have more than one factorization? True or False?
5. How do you find the remainder when a polynomial function $f(x)$ is divided by a linear factor $(x-a)$?

Learning Level 2

6. Find the remainder when $x^3 + 2x^2 - 5x + 7$ is divided by $x-2$.
7. Use the Factor Theorem to determine whether $(x+1)$ is a factor of $x^3 + 2x^2 - 3x - 2$.
8. Find a polynomial function of degree 3 with leading coefficient 2, such that $(x-1)$ is a factor, and the remainder when $f(x)$ is divided by $(x-3)$ is -5 .

9. If $f(x) = 2x^3 - x^2 - 7x + 5$, find $f(2)$ and $f(-1)$.

10. Using the Factor Theorem, factorize $x^3 - 7x^2 + 16x - 12$ completely.

Learning Level 3

11. Prove that if $(x-a)$ is a factor of a polynomial function $f(x)$, then $f(a) = 0$.

12. If the polynomial function $f(x)$ is such that $f(2) = 5$ and $f(3) = 11$, find the remainder when $f(x)$ is divided by $(x-2)(x-3)$.

13. If a polynomial function $f(x)$ has degree 4 and leading coefficient 1, and if $f(1) = f(3) = 0$, $f(2) = 9$, and $f(4) = 65$, find $f(x)$ completely.

14. If $f(x)$ is a polynomial function such that $f(x) = 0$ has roots 3 and -2, find a polynomial $g(x)$ such that $f(x)g(x) = x^2 + x - 6$.

15. Find a polynomial function of degree at most 3 which has -1 and $2i$ as zeros, and which passes through the point $(1, -7)$.