Writing Polynomial Equations from Graphs: Roots, Multiplicity, and End Behavior

Original tasks 1, 2 / independent work

Task 1

A polynomial graph crosses the x-axis at x = -1 and x = 4, and touches at x = 2. Both ends fall. The graph passes through (0, 8). Write a factored equation and state the degree.

Task 2

A polynomial graph crosses at x = -3 with a flattening shape, crosses at x = 0, and crosses at x = 5. The left end falls and the right end rises. Write a factored equation with leading coefficient 1 and state the degree.

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Original tasks 3, 4 / independent work

Task 3

A polynomial graph touches at x = -2 and touches at x = 3. Both ends fall. The graph passes through (0, -36). Write a factored equation and state the degree.

Task 4

A polynomial graph crosses at x = -4, touches at x = -1, and crosses at x = 2. Both ends fall. The graph passes through (0, 4). Write a factored equation and state the degree.