Chapter 9 Section 3

MA1032 Data, Functions & Graphs

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Factored Form

Example

$$p(x) = (x + 3)(x - 5)$$

Any n^{th} degree polynomial, $f(x)$, can be written as a product of n linear factors:

$$f(x) = (x - c_1)(x - c_2)(x - c_3) \cdots (x - c_n).$$

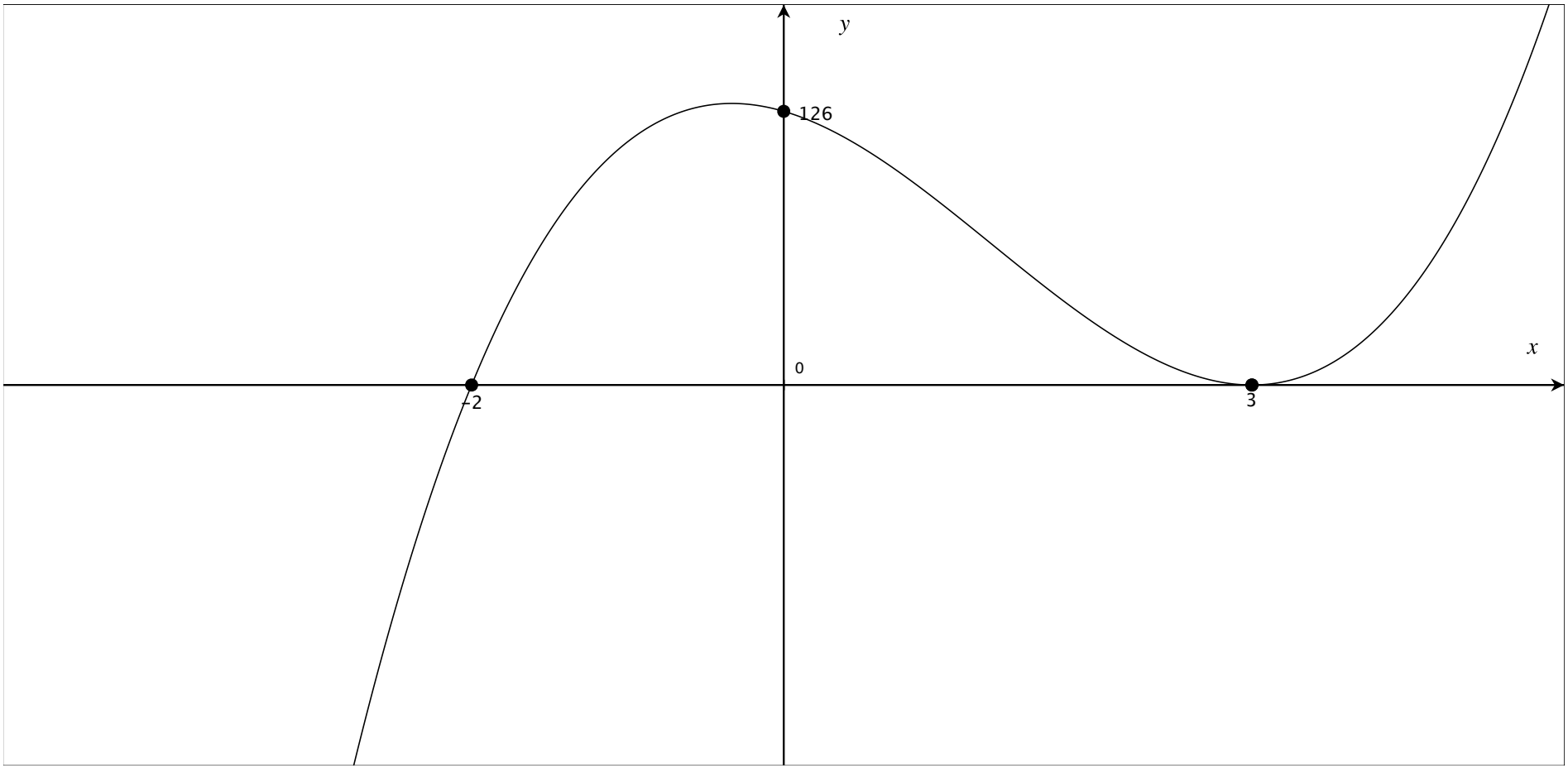
Examples

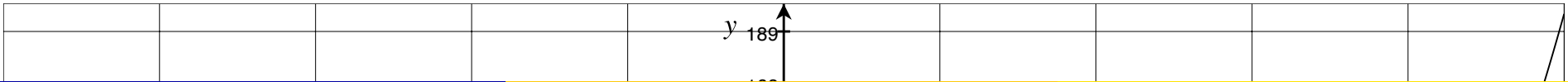
- $f(x) = (x+3)(x-5)^2$
- $g(x) = (x+3)^2(x-2)(x-4)^2$
- $h(x) = (x+1)(x-2)^3$
- $k(x) = x(x-3)^2$
- $j(x) = x^3(x-2)^2$

Piecing together the clues

Find a third degree polynomial that has a non-repeated root at -2, a double-root at 4, and passes through $(1, -2)$.

Graph to Equation





Summary

- Factored form of a polynomial
- Multiple zeros
- Reconstructing the formula for a polynomial from its graph