

Finding Zeros of Polynomial Functions

Factor Theorem: A polynomial $f(x)$ has a factor of $x - k$ if and only if $f(k) = 0$

Example

$$f(x) = x^3 - 3x^2 - 13x + 15$$

given $x + 3$

Your Turn

$$f(x) = 2x^3 + x^2 - 40x - 75$$

given $x - 5$

Given Function with $f(k) = 0$.

Use synthetic division to find the other factors.

Interpret the 3rd row as a quadratic expression.

Factor the resulting polynomial.

Write your polynomial in factored form. Remember the one factor that was given ($x - k$).

Set each factor equal to zero.

What is the relationship between the degree and the number of answers you have?