

If a polynomial P is divided by $x - c$, the remainder is the

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The Remainder Theorem

If the polynomial $f(x)$ is divided by $x - c$, then the remainder is $f(c)$.

Example 3: Use synthetic division and the Remainder Theorem to find the indicated function value.

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The Factor Theorem

Let $f(x)$ be a polynomial.

- If $f(c) = 0$, then $x - c$ is a factor of $f(x)$.
- If $x - c$ is a factor of $f(x)$, then $f(c) = 0$.

Example 4: Solve the equation $15x^3 + 14x^2 - 3x - 2 = 0$ given that -1 is a zero of $f(x) = 15x^3 + 14x^2 - 3x - 2$.