Polynomials factors and remainders

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A sample from this topic. The complete topic collection contains three different resources and worked solutions.

Read the explanation and worked example. Show your working; use a calculator only where asked.

What you will practise

- Use factor and remainder theorems and connect roots to polynomial graphs.
- Explain a method and check the reasonableness of a result.

Useful starting skills: Use the prerequisite operations and representations shown in the worked example.

A polynomial combines non-negative integer powers of a variable. The remainder when P(x) is divided by x-a is P(a); if P(a)=0, then x-a is a factor.

Factorised form reveals roots. Odd multiplicity roots cross the axis; even multiplicity roots touch it. Leading degree and coefficient guide end behaviour.

Worked example

For $P(x)=x^3-4x^2+x+6$, test whether x-2 is a factor.

$P(2)=8-16+2+6=0$.

Zero remainder establishes the factor.

Answer: x-2 is a factor

Try it yourself

Name: _____ Date: _____

1. Find remainder when x^3+2x-5 is divided by $x-2$.

2. Is $x+1$ a factor of x^2+3x+2?

Answers and explanations

Check the method as well as the final answer. An alternative correct method is also valid.

1. 7

Evaluate $P(2)=8+4-5$.

2. Yes

$P(-1)=1-3+2=0$.

Curriculum reference: VC2M10AA01; VC2M10AA06

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