

Partial Fraction

We have 3 new eActivities for your mathematical enjoyment. These are all focused on finding the partial fraction, using the ClassPad's divide, factor, combine, collect, expand, and simultaneous equation functions. And of course, try your own!

This file includes eActivities on:

- Partial Fraction 1 With Distinct Linear Factors
- Partial Fraction 2 With Irreducible Quadratic Factors
- Partial Fraction 3 Rational Functions

Partial Fraction 1

With Distinct Linear Factors

Partial Fraction 1
Distinct Linear Factors

<Example>
Find the partial fraction of $\frac{3x-7}{x^2-x}$.

Factor the denominator.
`factor(x2-x)=x*(x-1)`

We write
$$\frac{3x-7}{x^2-x} = \frac{A}{x} + \frac{B}{x-1}$$

$$= \frac{A \cdot x - A + B \cdot x}{x \cdot (x-1)}$$

Alg Standard Cplx Rad

Edit Action Interactive

`factor(x2-x)`
 $x \cdot (x-1)$

`combine($\frac{A}{x} + \frac{B}{x-1}$)`
 $\frac{A \cdot x - A + B \cdot x}{x \cdot (x-1)}$

`collect(A \cdot x - A + B \cdot x, x)`
 $\frac{(A+B) \cdot x - A}{x \cdot (x-1)}$

$$\begin{cases} 3=A+B \\ -7=-A \end{cases} \begin{matrix} A, B \\ \{A=7, B=-4\} \end{matrix}$$

□

Alg Standard Cplx Rad

Partial Fraction 2

With Irreducible Quadratic Factors

Partial Fraction 2
Irreducible Quadratic Factors

<Example>
Find the partial fraction of $\frac{3x^3-x^2+x}{(x^2+1)^2}$.

We write
$$\frac{3x^3-x^2+x}{(x^2+1)^2} = \frac{Ax+B}{x^2+1} + \frac{Cx+D}{(x^2+1)^2}$$

$$A \cdot x^3 + A \cdot x + B \cdot x^2 + B + C \cdot x + D$$

Alg Standard Cplx Rad

Partial Fraction 3

Rational Functions

Partial Fraction 3
Rational Function

<Example>
Find the partial fraction of $\frac{x^3-x^2+x}{x^2-x-2}$.

Divide the denominator by the numerator.
$$\frac{x^3-x^2+x}{x^2-x-2} = x + \frac{3x}{x^2-x-2}$$

Factor the numerator.
`factor(x2-x-2)=(x-2)*(x+1)`

Alg Standard Cplx Rad