

30

030-335 • WK 05

MONDAY
2017 JANUARY

M	T	W	T	F	S	S	12
			1	2	3	4	Dec
5	6	7	8	9	10	11	2016
12	13	14	15	16	17	18	
19	20	21	22	23	24	25	
26	27	28	29	30	31		

Partial fraction

* Polynomial fraction? A rational Expression is called polynomial.

if it is integral with respect to every letter entering into that expression

A polynomial is written as.

$$a_0 \cdot x^n + a_1 \cdot x^{n-1} + a_2 \cdot x^{n-2} + \dots + a_{n-1} \cdot x^{n-1}$$

is known as Ordered polynomial.

if $a_0 \neq 0$ then the above polynomial is of n^{th} degree

* Rational ~~polynomial~~ function

Rational function is a function of the form

$$y = f(x) = \frac{g(x)}{h(x)}, \text{ where } g(x) \text{ and } h(x) \text{ are polynomial}$$

It is defined for all real values of x excluding the $g(x)$ let $h(x) = 0$

02. Jan 2017

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12	13	14	15	16	17
19	20	21	22	23	24
26	27	28			25

TUESDAY
JANUARY 2017

37
WK 05 • 031-334

$$\frac{x-2}{x^2-2x-3} = \frac{g(x)}{h(x)}$$

Rational function

- i Proper Rational function.
- ii Improper Rational function.

Proper Rational function

A rational function is said to be proper if $\frac{g(x)}{h(x)}$ where $h(x) \neq 0$.

for all real values of x ,

If degree of $h(x) >$ degree of $g(x)$

the ~~fraction~~ rational fraction is proper.

$$\text{Ex} \frac{x-2}{x^2+2x-3} = \frac{g(x)}{h(x)}$$

Numerator of $g(x) = x-2$
degree of numerator = 1

Denominator of $h(x) = x^2+2x-3$
degree of denominator = 2

degree of $h(x) >$ degree of $g(x)$

\therefore the given rational number is a proper

~~proper~~ rational function

ii Improper rational function

A rational function is Improper rational function if degree of $h(x) \geq$ degree of $g(x)$

Ex^o
$$\frac{x^3 - 8}{x^2 + 5x - 2}$$

$$g(x) = x^3 - 8$$

$$h(x) = x^2 + 5x - 2$$

degree of $g(x) = 3$
degree of $h(x) = 2$

degree of $g(x) >$ degree of $h(x)$

so it is called Improper rational function.

$\Rightarrow \frac{x^3 - 8}{x^2 + 5x - 2}$

~~is~~

$$\begin{array}{r}
 x^2 + 5x - 2 \overline{) x^3 - 8} \\
 \underline{x^2 + 5x^2 - 2x} \\
 - 5x^2 + 2x - 8 \\
 \underline{- 5x^2 - 25x + 80} \\
 + + \\
 27x - 18
 \end{array}$$

$$\frac{x^3 - 8}{x^2 + 5x - 2} = (x - 5) + \frac{27x - 18}{x^2 + 5x - 2}$$

* Partial function.

the process of decomposing a given proper or improper rational function into a no of constituent of proper rational function.

* Types of partial function.

- i Distinct linear factors of denominators
- ii Repeated linear factors of denominators.
- iii Repeated distinct and Quadratic factors
- iv Repeated Quadratic factors.

i Distinct linear factors

03

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FRIDAY

2017 FEBRUARY

check the degree of numerator
and degree of denominator
if degree of numerator < degree
of denominator then it is proper

If degree of numerator \geq degree of denominator
then the fraction is improper.

Divide the numerator by denominator
and express it in mixed fraction.

$$\frac{g(x)}{h(x)} = h(x) + \frac{u(x)}{h(x)}$$

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