7.4 Partial Fraction Decomposition Extension

Problems we have completed:

$$\frac{5x-1}{x^2-2x-15} \qquad \frac{2x^3-x^2+5x}{(x^2+1)^2} \qquad \frac{-x^2+2x+4}{x^3-4x^2+4x} \qquad \frac{x^2+4x+1}{x^3-x^2+x-1}$$

To be completed.... $\frac{2x^2-9x-10}{x^2-5x}$ what do you notice that's different?

Sep 25-10:19 AM

Complete partial fraction decomposition and then sketch a graph.

1.) $\frac{2x^2-9x-10}{x^2-5x}$

$x^2-5x+0 \;\overline{)\; 2x^2-9x-10}$

$2x^2-10x+0$

$x-10$

$f(x)=2+\frac{x-10}{x^2-5x}$

$\frac{x-10}{x(x-5)} \rightarrow \frac{A}{x}+\frac{B}{x-5}$

$A(x-5)+Bx$

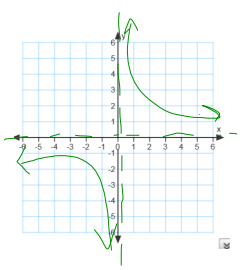
$Ax-5A+Bx$

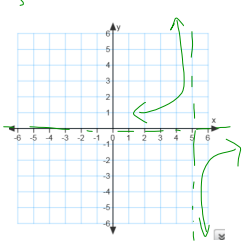
$A+B=1 \quad A=2$

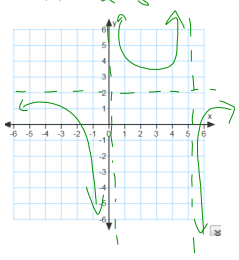
$-5A=-10 \quad B=-1$

$f(x)=2+\frac{2}{x}+\frac{-1}{x-5}$

$f(x)=2+\frac{2}{x}+\frac{-1}{x-5}$







Sep 25-10:23 AM

Complete partial fraction decomposition and then sketch a graph.

2.) $\dfrac{2x^2+x-14}{x^2-4}$

$x^2+0x-4 \;\overline{)\; 2x^2+x-14}$

2

$-(2x^2+0x-8)$

$x-6$

$f(x) = 2 + \dfrac{x-6}{x^2-4}$

$\dfrac{x-6}{(x+2)(x-2)} \rightarrow \dfrac{A}{x+2} + \dfrac{B}{x-2}$

$Ax-2A+Bx+2B$

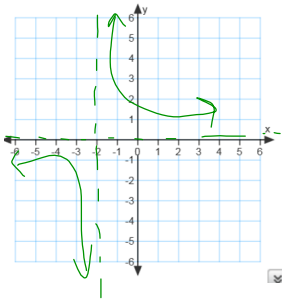
$A+B=1$

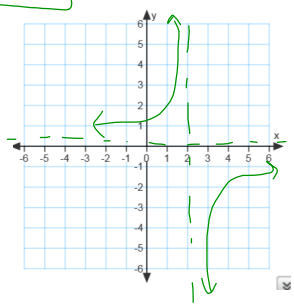
$-2A+2B=-6$

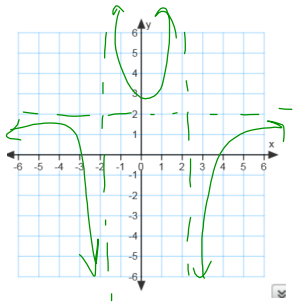
$A=2$

$B=-1$

$f(x) = 2 + \dfrac{2}{x+2} + \dfrac{-1}{x-2}$







Sep 25-12:31 PM