Write out the partial fraction decomposition for each of the following rational functions:

Rational function	Partial Fraction Decomposition
$\frac{x}{(x+1)^2(x^2+4)}$	
$\frac{x^2+x-1}{x^2(x^2+14)^4}$	
$\frac{x^3-x-1}{x^2(x+1)(x^4-4)}$	
$\frac{x^5-x^3-x-1}{x^3(x^2+4)^3}$	
$\frac{x^3-1}{x(x+1)(x-2)(x^3-1)}$	

Write out the partial fraction decomposition for each of the following rational functions:

Rational function	Partial Fraction Decomposition
$\frac{x}{(x+1)^2(x^2+4)}$	$\frac{x}{(x+1)^2(x^2+4)} = \frac{A}{(x+1)} + \frac{B}{(x+1)^2} + \frac{C\cdot x+D}{x^2+4}$
$\frac{x^2+x-1}{x^2(x^2+14)^4}$	$\frac{x^2+x-1}{x^2(x^2+14)^4} = \frac{A}{x} + \frac{B}{x^2} + \frac{C\cdot x+D}{x^2+14} + \frac{E\cdot x+F}{(x^2+14)^2} + \frac{G\cdot x+H}{(x^2+14)^3} + \frac{I\cdot x+J}{(x^2+14)^4}$
$\frac{x^3-x-1}{x^2(x+1)(x^4-4)}$	$\frac{x^3-x-1}{x^2(x+1)(x^4-4)} = \frac{x^3-x-1}{x^2(x+1)(x^2-2)(x^2+2)}$ $= \frac{x^3-x-1}{x^2(x+1)(x-\sqrt{2})(x+\sqrt{2})(x^2+2)} = \frac{A}{x} + \frac{B}{x^2} + \frac{C}{x+1} + \frac{D}{x+\sqrt{2}} + \frac{E}{x-\sqrt{2}} + \frac{F\cdot x+G}{x^2+2}$
$\frac{x^5-x^3-x-1}{x^3(x^2+4)^3}$	$\frac{x^5-x^3-x-1}{x^3(x^2+4)^3} = \frac{A}{x} + \frac{B}{x^2} + \frac{C}{x^3} + \frac{E\cdot x+F}{x^2+4} + \frac{G\cdot x+H}{(x^2+4)^2} + \frac{I\cdot x+H}{(x^2+4)^3}$
$\frac{x^3-1}{x(x+1)(x-2)(x^3-1)}$	$\frac{x^3-1}{x(x+1)(x-2)(x^3-1)} = \frac{x^3-1}{x(x+1)(x-2)(x-1)(x^2+x+1)} = \frac{A}{x} + \frac{B}{x+1} + \frac{C}{x-2} + \frac{D}{x-1} + \frac{E\cdot x+F}{x^2+x+1}$