

In [1]:

```
numerator(x)=x^4-2*x^2+4*x+1
denominator(x)=(x^3-x^2-x+1)
f(x)=numerator(x)/denominator(x)
show(f)
```

Out[1]:

$$x \mapsto \frac{x^4 - 2x^2 + 4x + 1}{x^3 - x^2 - x + 1}$$

In [2]:

```
[quotient,remainder]=(numerator(x)).maxima_methods().divide(denominator(x))
show(quotient)
```

Out[2]:

$$x + 1$$

In [3]:

```
show(remainder)
```

Out[3]:

$$4x$$

In [4]:

```
show((remainder(x)/denominator(x)).partial_fraction())
```

Out[4]:

$$-\frac{1}{x+1} + \frac{1}{x-1} + \frac{2}{(x-1)^2}$$

In [5]:

```
# double check
show(f.partial_fraction())
```

Out[5]:

$$x \mapsto x - \frac{1}{x+1} + \frac{1}{x-1} + \frac{2}{(x-1)^2} + 1$$

In [0]: