

In [1]:

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

Out[1]:

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

In [2]:

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

Out[2]:

1

In [3]:

```
show(remainder)
```

Out[3]:

$$5x^2 - 6x + 1$$

In [4]:

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

Out[4]:

$$-\frac{9}{2(x-2)} + \frac{28}{3(x-3)} + \frac{1}{6x}$$

In [5]:

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

Out[5]:

$$x \mapsto -\frac{9}{2(x-2)} + \frac{28}{3(x-3)} + \frac{1}{6x} + 1$$

In [6]:

```
show(integrate(quotient,x))
```

Out[6]:

x

In [7]:

```
show(integrate(1/(6*x),x))
```

Out[7]:

$$\frac{1}{6} \log(x)$$

In [8]:

```
show(integrate(28/(3*(x-3)),x))
```

Out[8]:

$$\frac{28}{3} \log(x - 3)$$

In [9]:

```
show(integrate(-9/(2*(x-2)),x))
```

Out[9]:

$$-\frac{9}{2} \log(x - 2)$$

In [10]:

```
# double check  
show(integrate(f(x),x))
```

Out[10]:

$$x - \frac{9}{2} \log(x - 2) + \frac{28}{3} \log(x - 3) + \frac{1}{6} \log(x)$$

In [0]: