Laguerre functions

```
#Laguerre陪多項式
L(n,a,x)=binomial(a+n,n) * hypergeometric_M(-n , a+1 , x) ; L
```

$$(n, a, x) \mapsto \binom{a+n}{n} M\left(-n, a+1, x\right)$$

```
#Laguerre多項式
L(n,x) = L(n,0,x)
```

```
#L0
L(0,x).simplify_hypergeometric();
```

$$1$$

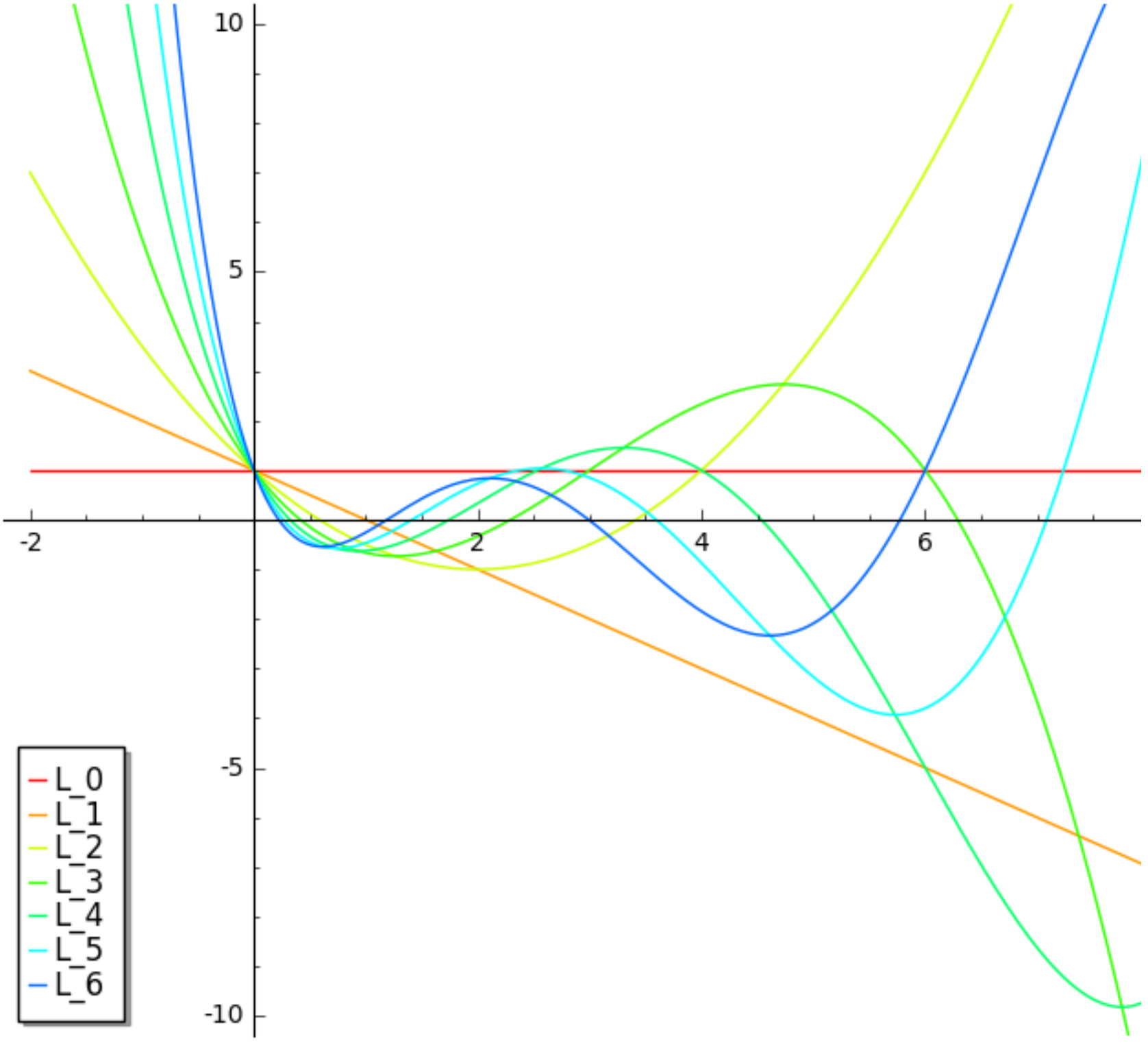
```
#L1
L(1,x).simplify_hypergeometric()
```

$$-x+1$$

```
#L2
L(2,x).simplify_hypergeometric();
```

$$\frac{1}{2}\,x^2-2\,x+1$$

```
p0 = plot(L(0,x),
(x,-2,10),rgbcolor=hue(0),ymin=-10,ymax=10,legend_label="L_0")
p1 = plot(L(1,x),
(x,-2,10),rgbcolor=hue(0.1),ymin=-10,ymax=10,legend_label="L_1")
p2 = plot(L(2,x),
(x,-2,10),rgbcolor=hue(0.2),ymin=-10,ymax=10,legend_label="L_2")
p3 = plot(L(3,x),
(x,-2,10),rgbcolor=hue(0.3),ymin=-10,ymax=10,legend_label="L_3")
p4 = plot(L(4,x),
(x,-2,10),rgbcolor=hue(0.4),ymin=-10,ymax=10,legend_label="L_4")
p5 = plot(L(5,x),
(x,-2,10),rgbcolor=hue(0.5),ymin=-10,ymax=10,legend_label="L_5")
p6 = plot(L(6,x),
(x,-2,10),rgbcolor=hue(0.6),ymin=-10,ymax=10,legend_label="L_6")
show(p0+p1+p2+p3+p4+p5+p6)
```


10
5
-5
-10
-2
2
4
6
L_0
L_1
L_2
L_3
L_4
L_5
L_6