```
> with(orthopoly):
>
> ((2*n+1)/2) * int( exp(x)*P(n,x) , x=-1..1);
```

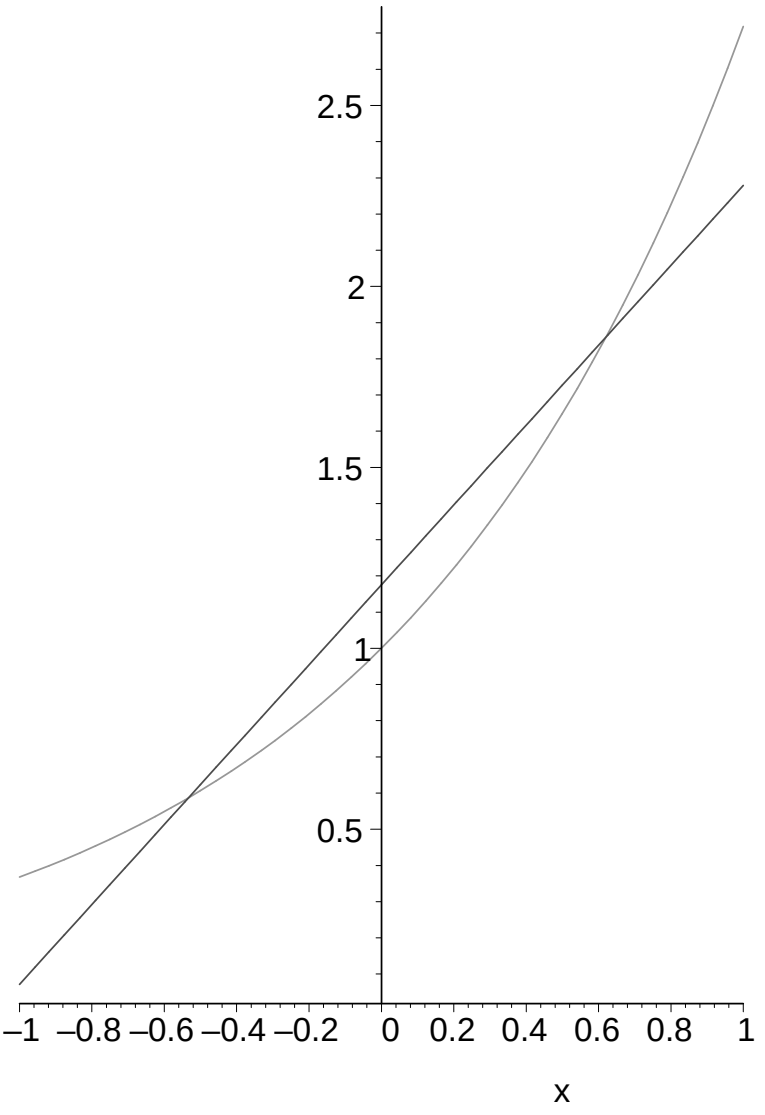
$$\frac{1}{2}(2\,n+1)\int_{-1}^{1}\mathbf{e}^{x}\,\mathrm{P}(n,x)\,dx$$

```
> sum('((2*n+1)/2) * int( exp(x)*P(n,x) , x=-1..1) *
  P(n,x)','n'=0..1); evalf(%);
```

$$\frac{1}{2}\,\mathbf{e}-\frac{1}{2}\,\mathbf{e}^{(-1)}+3\,\mathbf{e}^{(-1)}\,x$$

$$1.175201193+1.103638324\,x$$

```
> plot(
  [sum('((2*n+1)/2) * int( exp(x)*P(n,x) , x=-1..1) *
  P(n,x)','n'=0..1) , exp(x)]
  , x=-1..1);
```



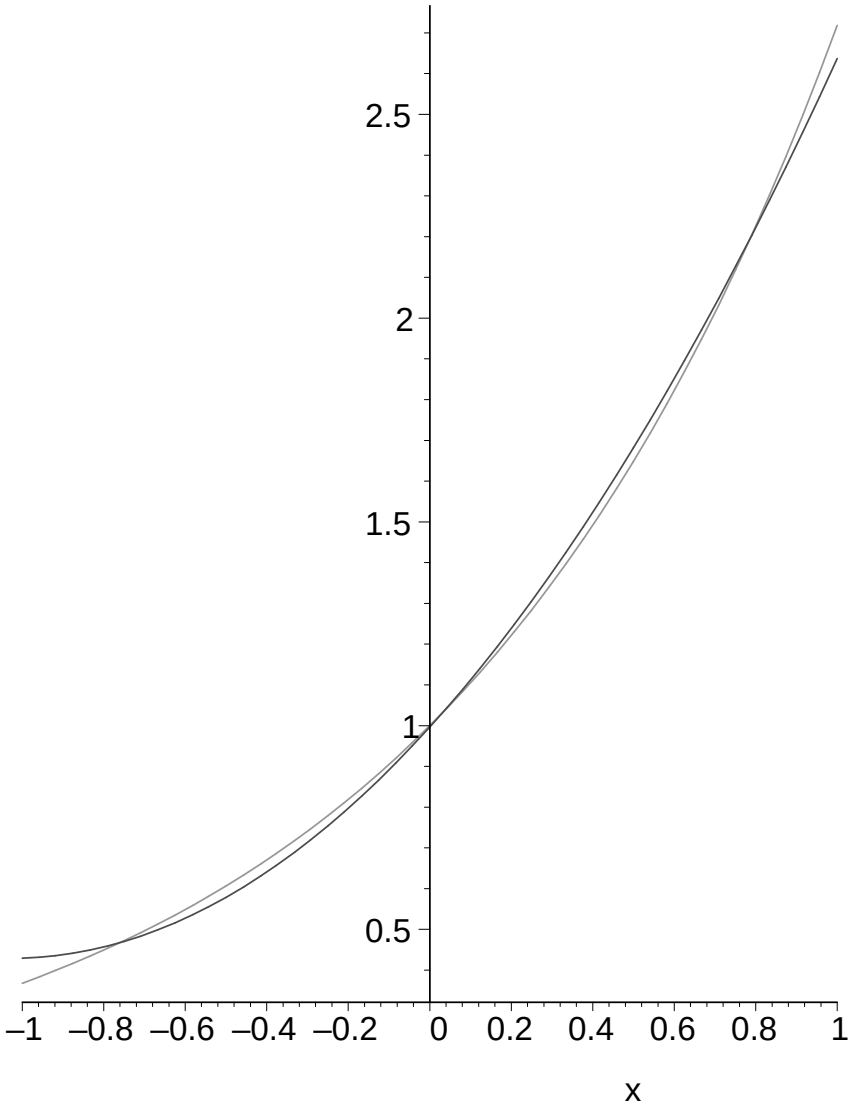

```
> sum('((2*n+1)/2) * int( exp(x)*P(n,x) , x=-1..1) *
```

```
  P(n,x)',’n’=0..2); evalf(%);
```

$$\frac{1}{2}\,\mathbf{e}-\frac{1}{2}\,\mathbf{e}^{(-1)}+3\,\mathbf{e}^{(-1)}\,x+\frac{5}{2}\,(\mathbf{e}-7\,\mathbf{e}^{(-1)})\left(-\frac{1}{2}+\frac{3\,x^2}{2}\right)$$

$$0.9962940180+1.103638324\,x+0.5367215250\,x^2$$

```
> plot(
  [sum('((2*n+1)/2) * int( exp(x)*P(n,x) , x=-1..1) *
  P(n,x)',’n’=0..2) , exp(x)]
  , x=-1..1);
```

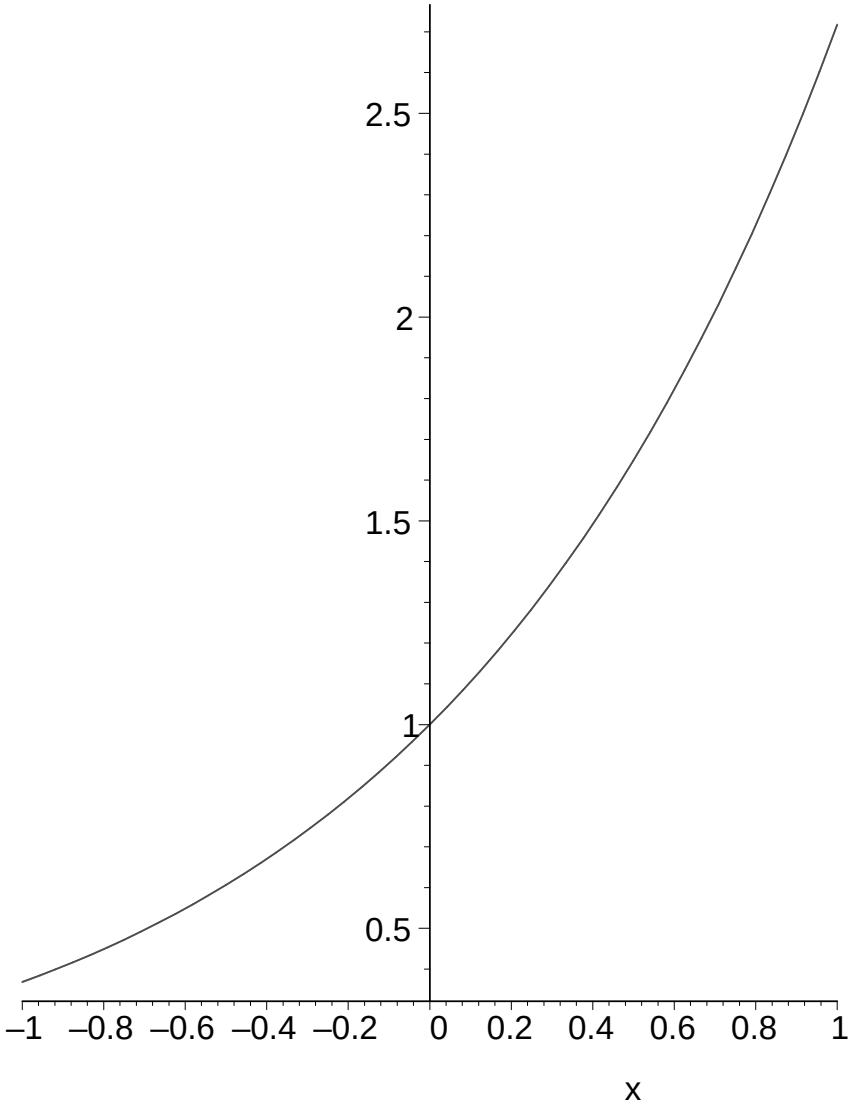



```
> sum('((2*n+1)/2) * int( exp(x)*P(n,x) , x=-1..1) *
  P(n,x)',’n’=0..4); evalf(%);
```

$$\frac{1}{2}\,\mathbf{e}-\frac{1}{2}\,\mathbf{e}^{(-1)}+3\,\mathbf{e}^{(-1)}\,x+\frac{5}{2}\,(\mathbf{e}-7\,\mathbf{e}^{(-1)})\left(-\frac{1}{2}+\frac{3\,x^2}{2}\right)+\frac{7}{2}\,(-5\,\mathbf{e}+37\,\mathbf{e}^{(-1)})\left(\frac{5}{2}\,x^3-\frac{3}{2}\,x\right)$$
$$+\frac{9}{2}\,(36\,\mathbf{e}-266\,\mathbf{e}^{(-1)})\left(\frac{3}{8}+\frac{35}{8}\,x^4-\frac{15}{4}\,x^2\right)$$

$$1.000030902 + 0.9979548790\,x + 0.4993526812\,x^2 + 0.1761390750\,x^3 + 0.04359698438\,x^4$$

```
> plot(
  [sum('((2*n+1)/2) * int( exp(x)*P(n,x) , x=-1..1) *
  P(n,x)','n'=0..4) , exp(x)]
  , x=-1..1);
```




```
>
```