```
> taylor(exp(x),x=0);
```

$$1 + x + \frac{1}{2}x^2 + \frac{1}{6}x^3 + \frac{1}{24}x^4 + \frac{1}{120}x^5 + O(x^6) \quad (1)$$

```
> taylor(exp(x),x=2);
```

$$e^2 + e^2(x-2) + \frac{1}{2}e^2(x-2)^2 + \frac{1}{6}e^2(x-2)^3 + \frac{1}{24}e^2(x-2)^4 + \frac{1}{120}e^2(x-2)^5 + O((x-2)^6) \quad (2)$$

```
> A:= taylor(exp(x),x=0,10);
```

$$A := 1 + x + \frac{1}{2}x^2 + \frac{1}{6}x^3 + \frac{1}{24}x^4 + \frac{1}{120}x^5 + \frac{1}{720}x^6 + \frac{1}{5040}x^7 + \frac{1}{40320}x^8 + \frac{1}{362880}x^9 + O(x^{10}) \quad (3)$$

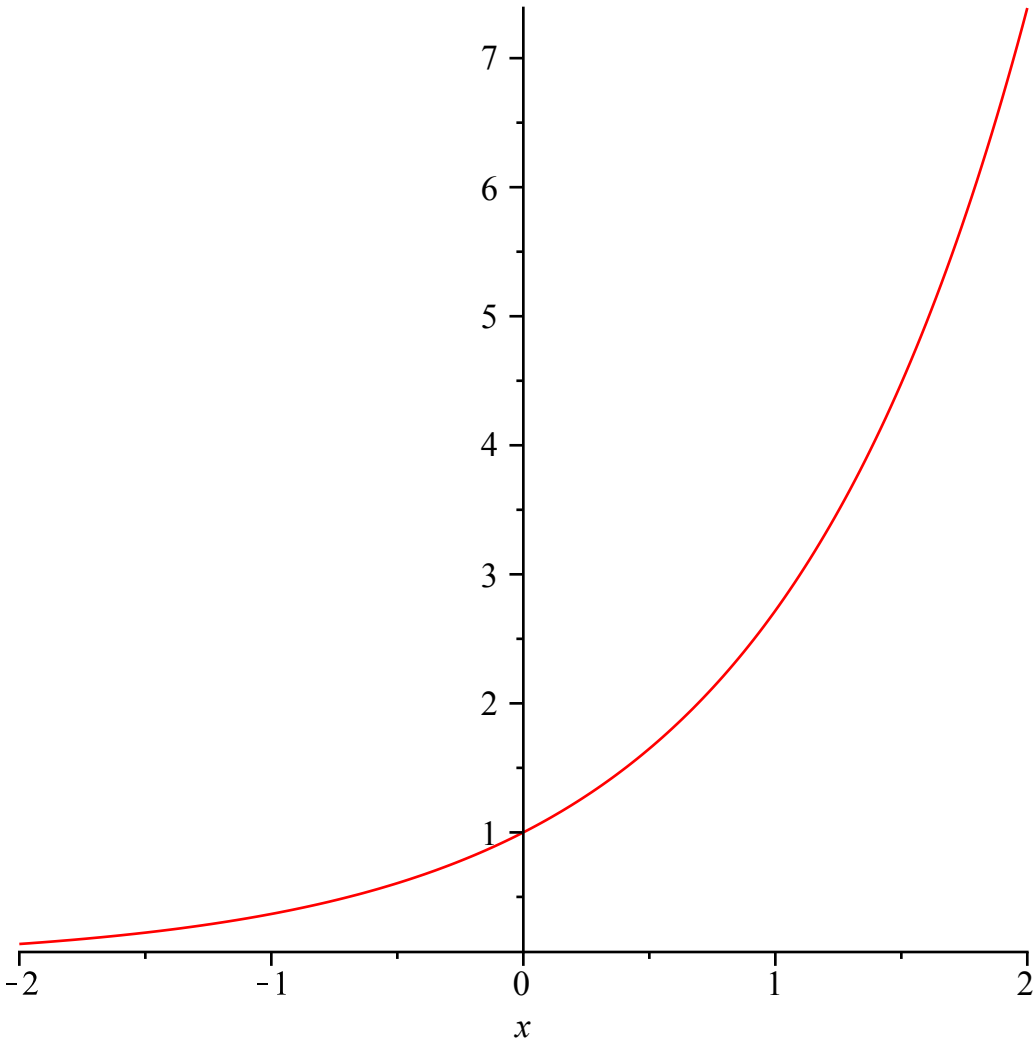
```
> convert(A, polynom);
```

$$1 + x + \frac{1}{2}x^2 + \frac{1}{6}x^3 + \frac{1}{24}x^4 + \frac{1}{120}x^5 + \frac{1}{720}x^6 + \frac{1}{5040}x^7 + \frac{1}{40320}x^8 + \frac{1}{362880}x^9 \quad (4)$$

```
> p9:=unapply(%,x);
```

$$p9 := x \to 1 + x + \frac{1}{2}x^2 + \frac{1}{6}x^3 + \frac{1}{24}x^4 + \frac{1}{120}x^5 + \frac{1}{720}x^6 + \frac{1}{5040}x^7 + \frac{1}{40320}x^8 + \frac{1}{362880}x^9 \quad (5)$$

```
> plot(p9(x),x=-2..2);
```

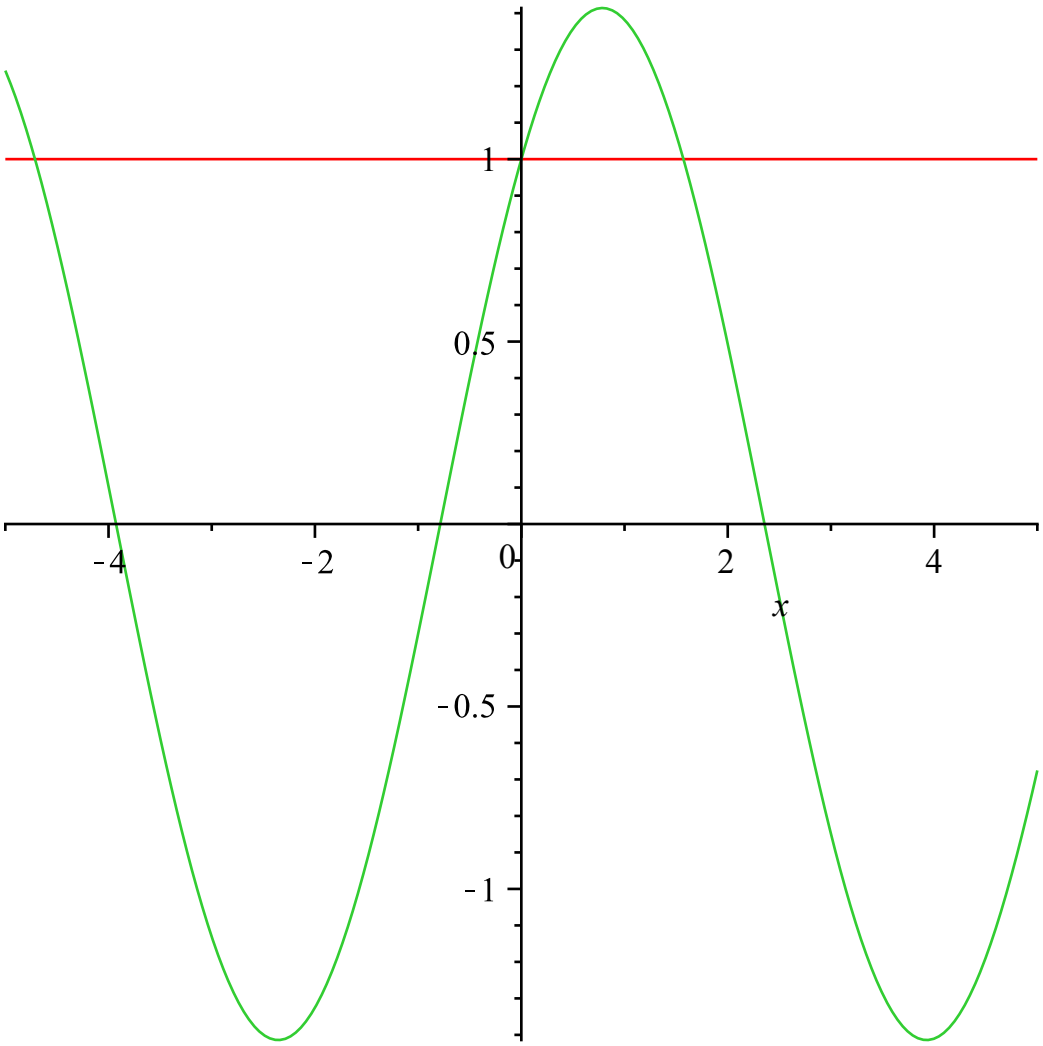



```
> for j from 0 to 5 do
  taylor(sin(x)+cos(x),x,2*j+1):
  convert(%,polynom):
  p||(2*j) := unapply(%,x);
  plot({p||(2*j)(x),sin(x)+cos(x)},x=-5..5);
  od;
```

$$1 + \mathrm{O}(x)$$

$$1$$

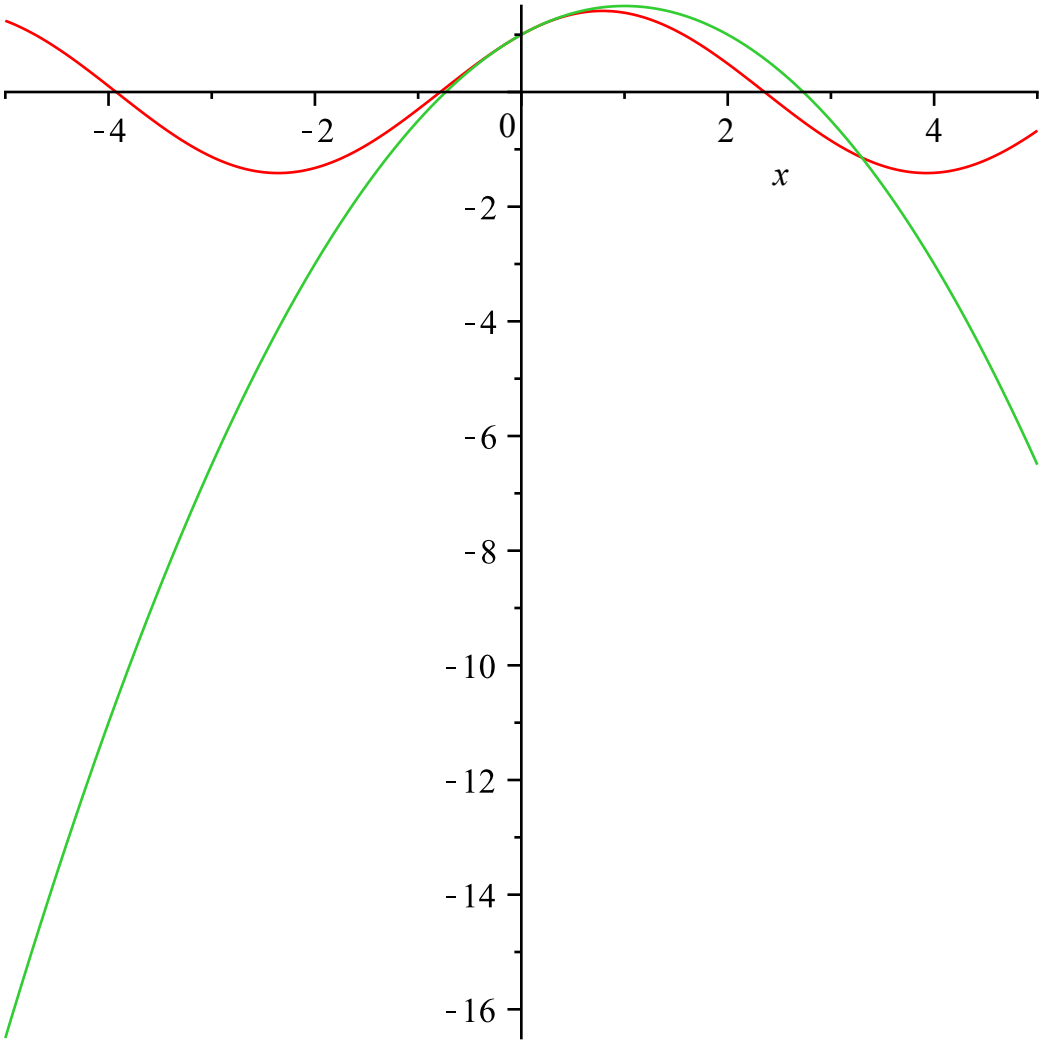
$$p0 := x \to 1$$



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

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

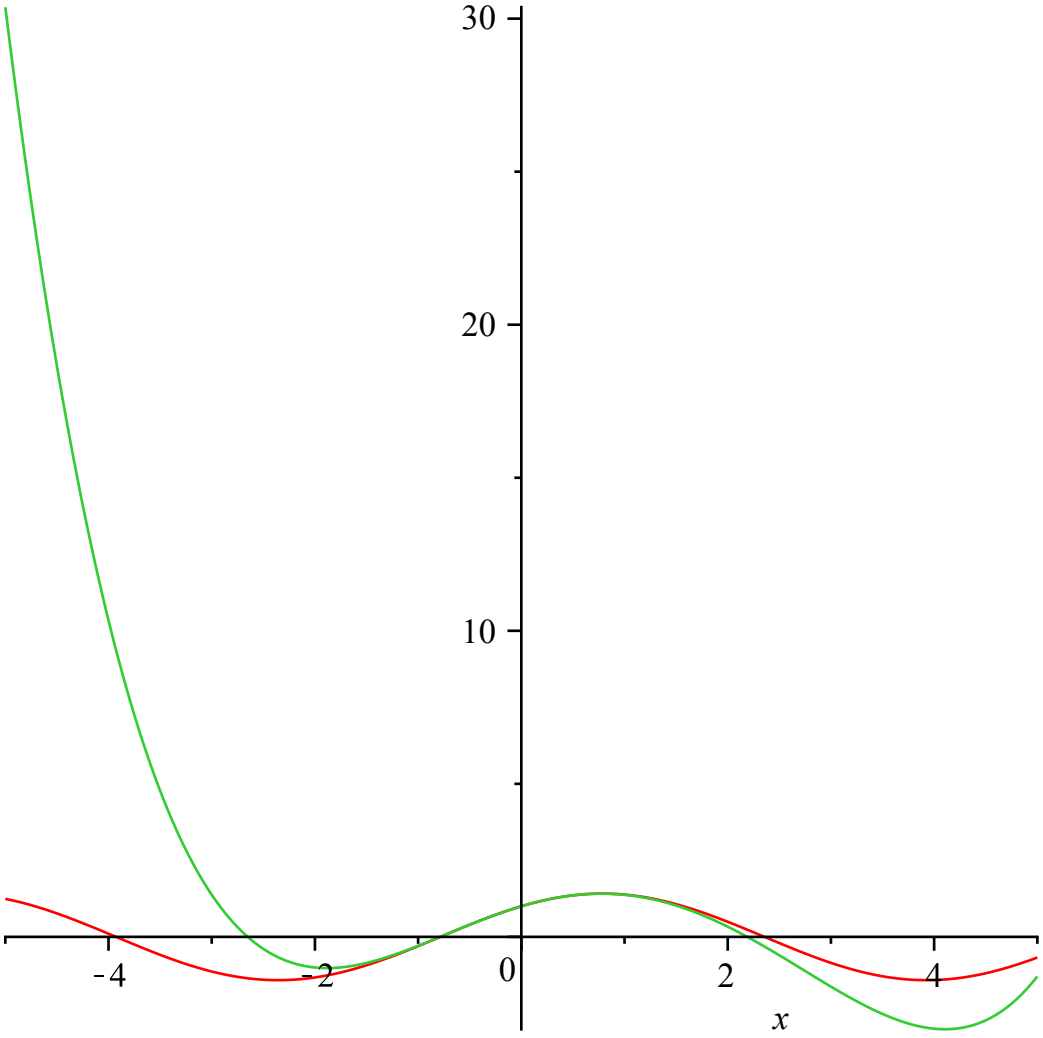
$$p2 := x \to 1 + x - \frac{1}{2} x^2$$



$$1 + x - \frac{1}{2} x^2 - \frac{1}{6} x^3 + \frac{1}{24} x^4 + O(x^5)$$

$$1 + x - \frac{1}{2} x^2 - \frac{1}{6} x^3 + \frac{1}{24} x^4$$

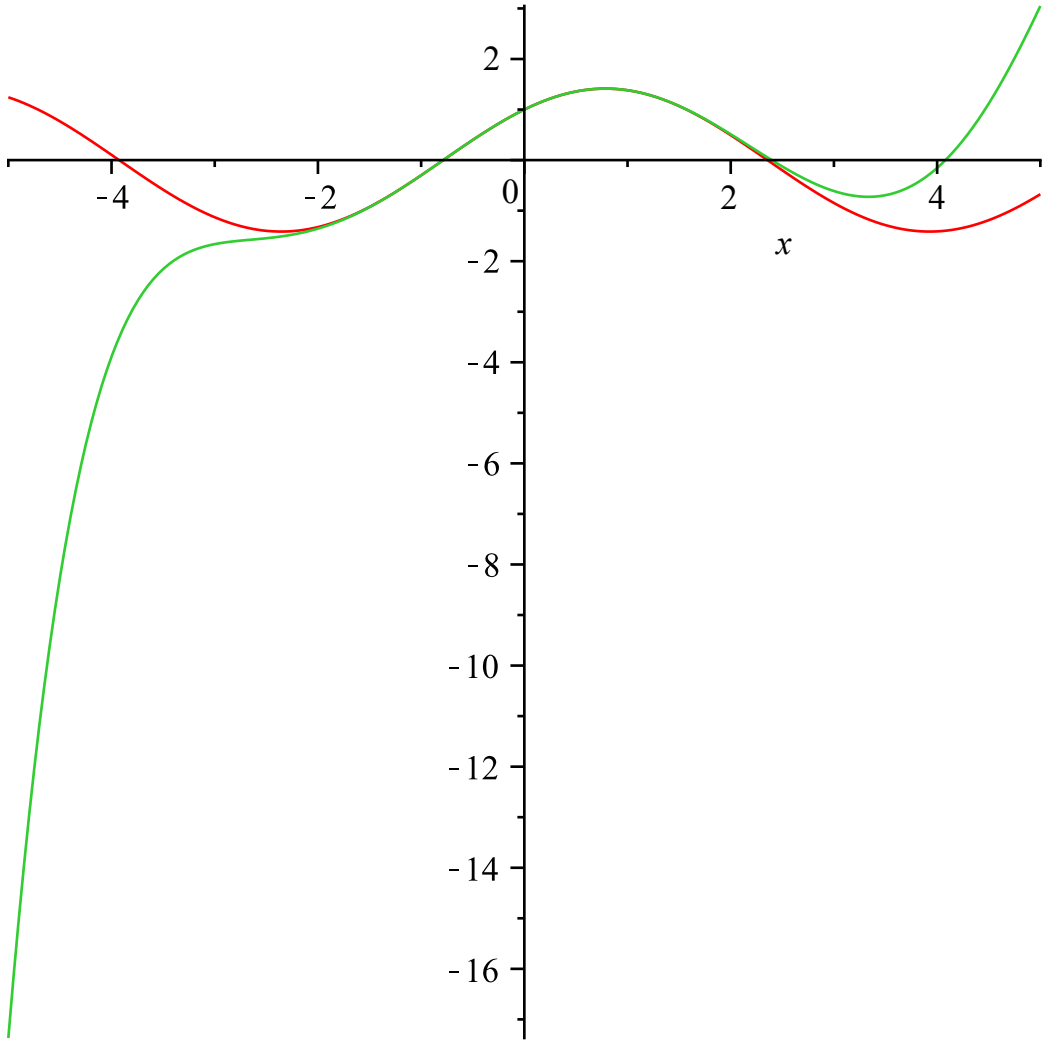
$$p4 := x \to 1 + x - \frac{1}{2} x^2 - \frac{1}{6} x^3 + \frac{1}{24} x^4$$



$$1 + x - \frac{1}{2} x^2 - \frac{1}{6} x^3 + \frac{1}{24} x^4 + \frac{1}{120} x^5 - \frac{1}{720} x^6 + O(x^7)$$

$$1 + x - \frac{1}{2} x^2 - \frac{1}{6} x^3 + \frac{1}{24} x^4 + \frac{1}{120} x^5 - \frac{1}{720} x^6$$

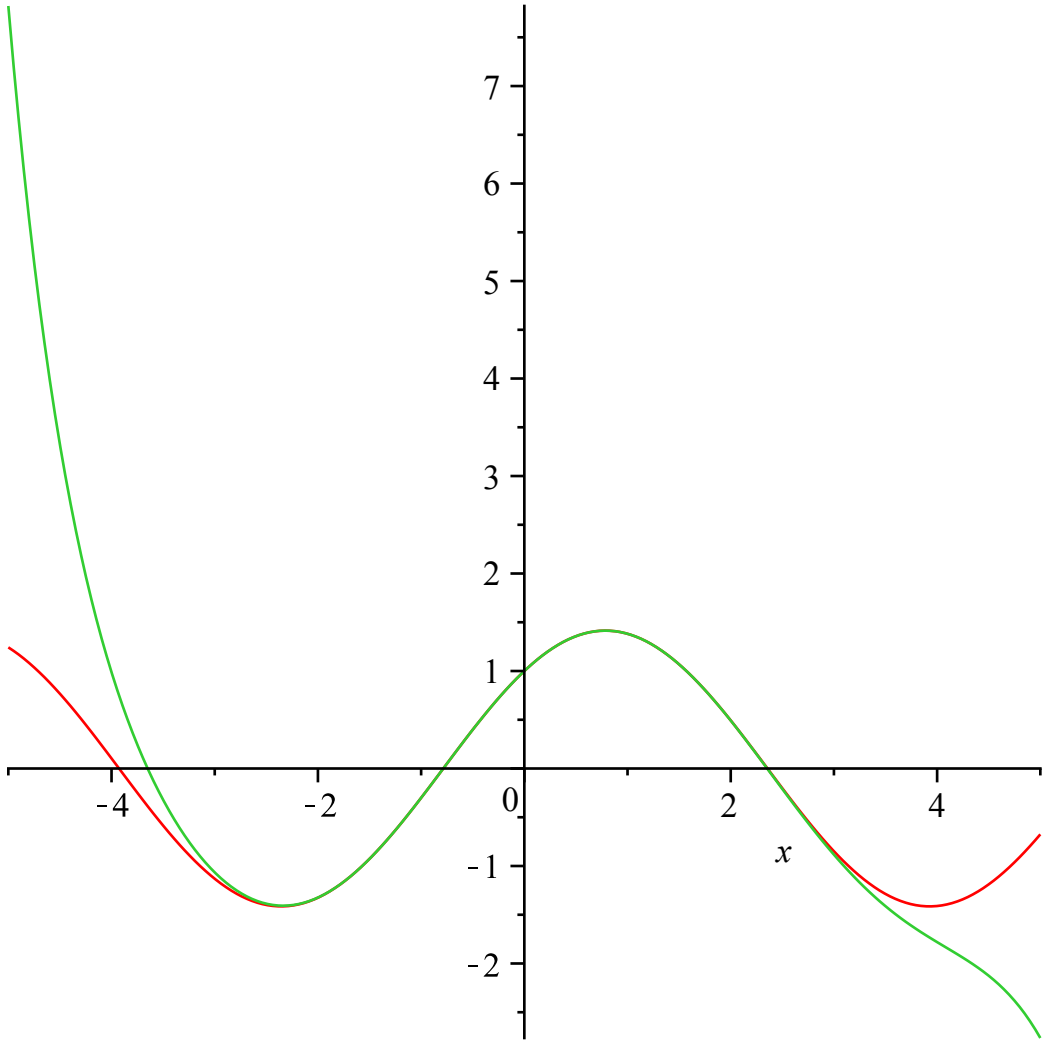
$$p6 := x \to 1 + x - \frac{1}{2} x^2 - \frac{1}{6} x^3 + \frac{1}{24} x^4 + \frac{1}{120} x^5 - \frac{1}{720} x^6$$



$$1 + x - \frac{1}{2}x^2 - \frac{1}{6}x^3 + \frac{1}{24}x^4 + \frac{1}{120}x^5 - \frac{1}{720}x^6 - \frac{1}{5040}x^7 + \frac{1}{40320}x^8 + O(x^9)$$

$$1 + x - \frac{1}{2}x^2 - \frac{1}{6}x^3 + \frac{1}{24}x^4 + \frac{1}{120}x^5 - \frac{1}{720}x^6 - \frac{1}{5040}x^7 + \frac{1}{40320}x^8$$

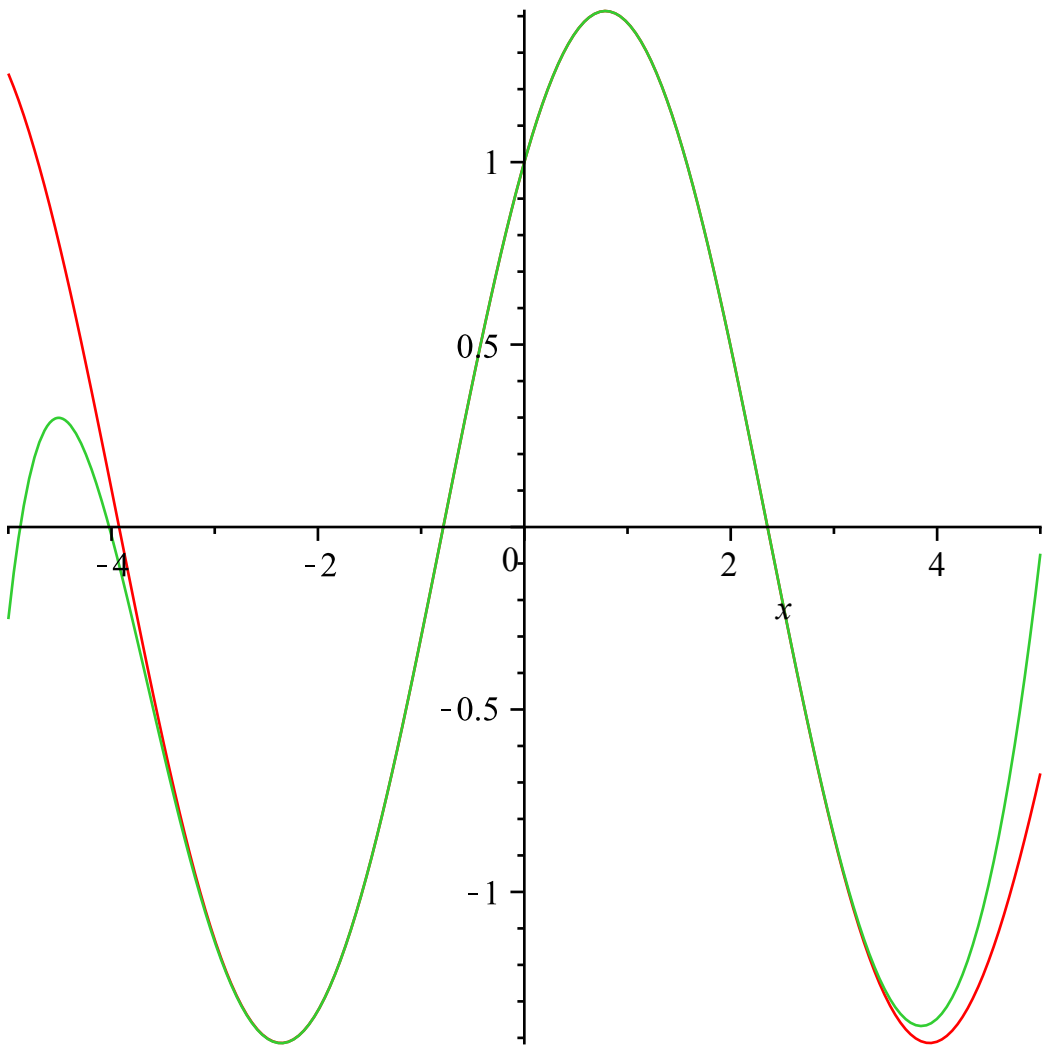
$$p8 := x \to 1 + x - \frac{1}{2}x^2 - \frac{1}{6}x^3 + \frac{1}{24}x^4 + \frac{1}{120}x^5 - \frac{1}{720}x^6 - \frac{1}{5040}x^7 + \frac{1}{40320}x^8$$



$$1 + x - \frac{1}{2}x^2 - \frac{1}{6}x^3 + \frac{1}{24}x^4 + \frac{1}{120}x^5 - \frac{1}{720}x^6 - \frac{1}{5040}x^7 + \frac{1}{40320}x^8 + \frac{1}{362880}x^9 - \frac{1}{3628800}x^{10} + O(x^{11})$$

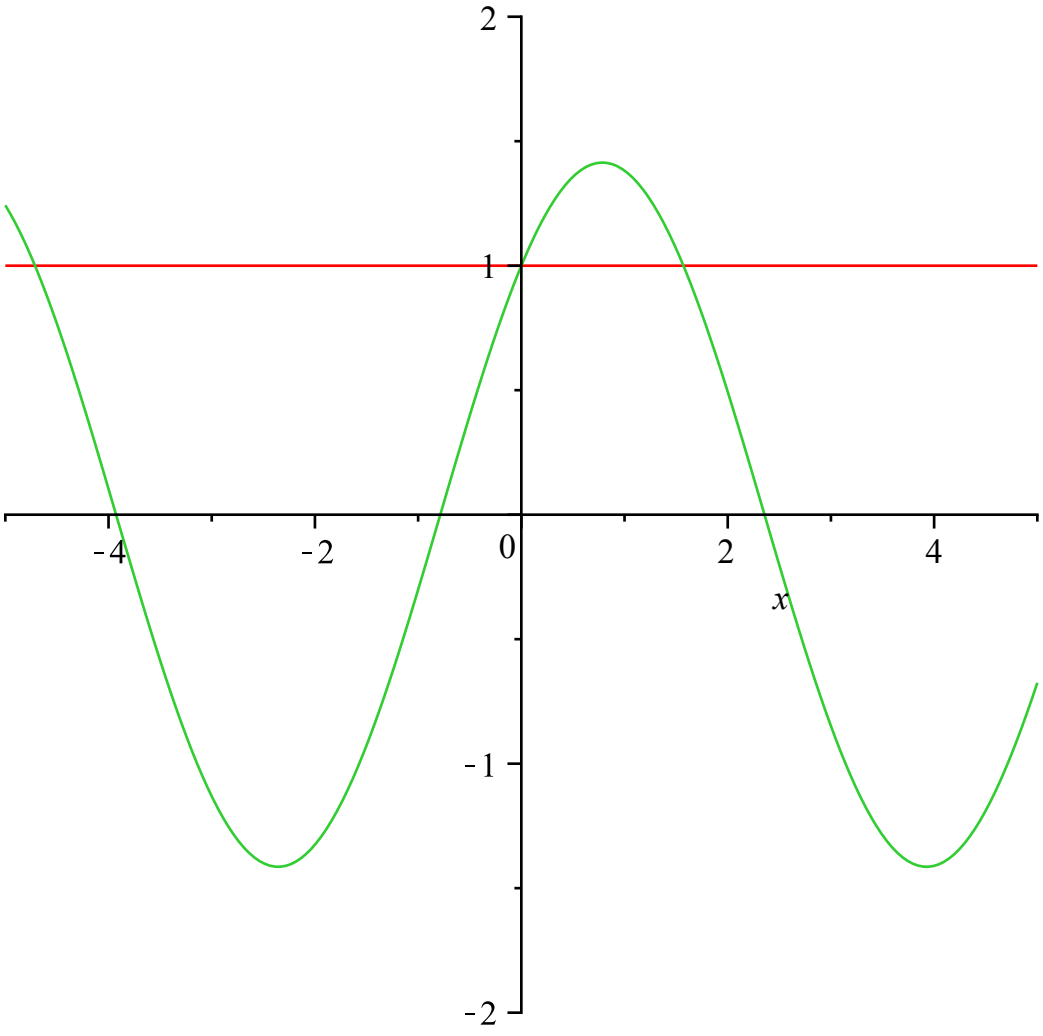
$$1 + x - \frac{1}{2}x^2 - \frac{1}{6}x^3 + \frac{1}{24}x^4 + \frac{1}{120}x^5 - \frac{1}{720}x^6 - \frac{1}{5040}x^7 + \frac{1}{40320}x^8 + \frac{1}{362880}x^9 - \frac{1}{3628800}x^{10}$$

$$p10 := x \to 1 + x - \frac{1}{2}x^2 - \frac{1}{6}x^3 + \frac{1}{24}x^4 + \frac{1}{120}x^5 - \frac{1}{720}x^6 - \frac{1}{5040}x^7 + \frac{1}{40320}x^8 + \frac{1}{362880}x^9 - \frac{1}{3628800}x^{10}$$

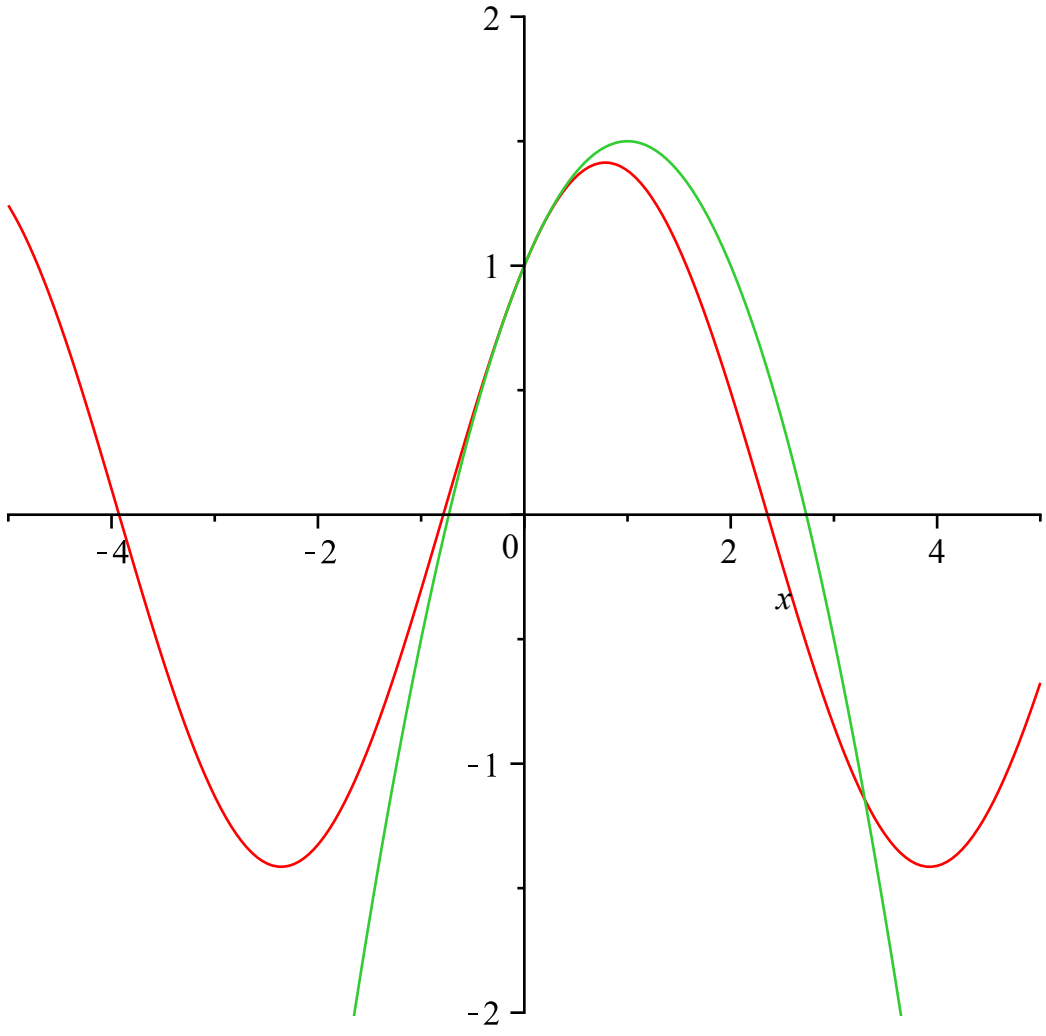



```
> for j from 0 to 5 do
  taylor(sin(x)+cos(x),x,2*j+1):
  convert(%,polynom):
  p||(2*j) := unapply(%,x):
  print(2*j);
  print(plot({p||(2*j)(x),sin(x)+cos(x)},x=-5..5,view=[-5..5, -2.
  .2]));
  od:
```

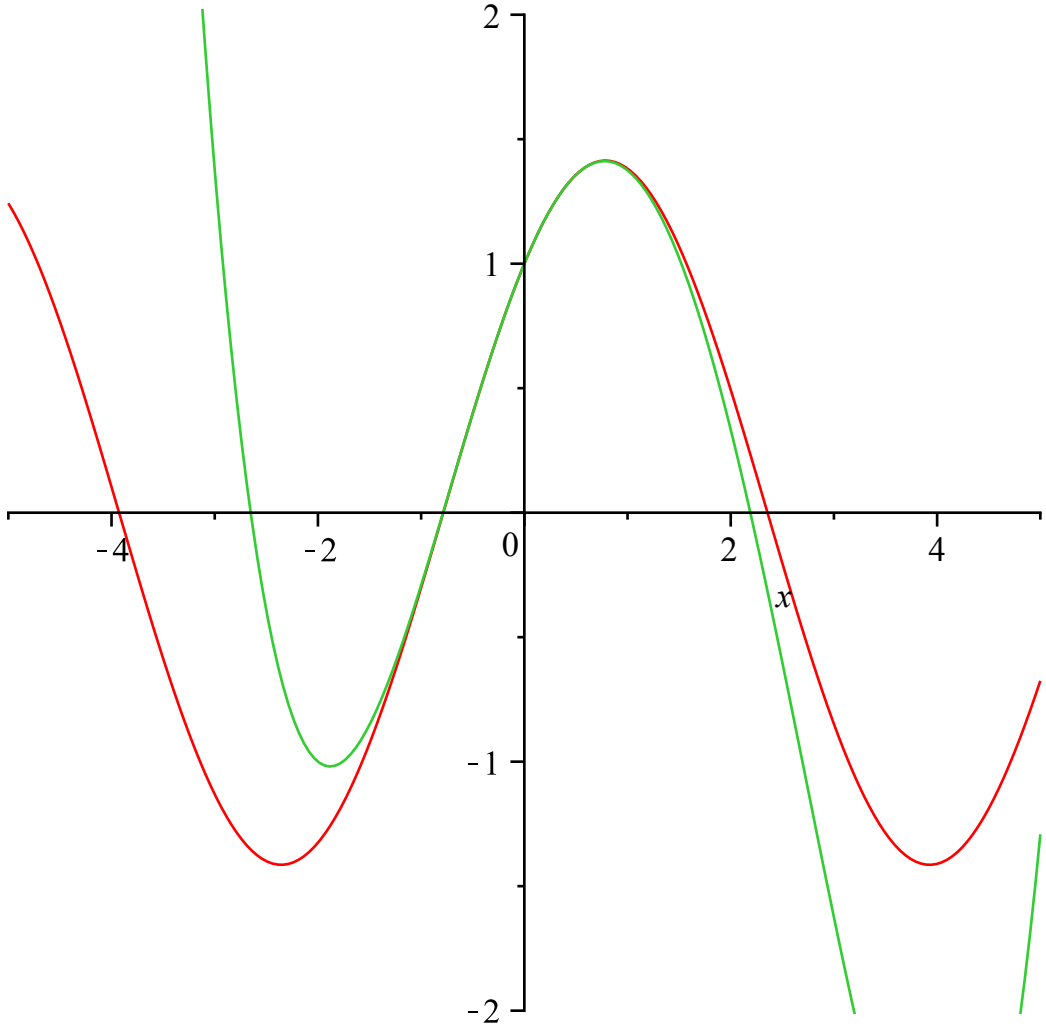
0

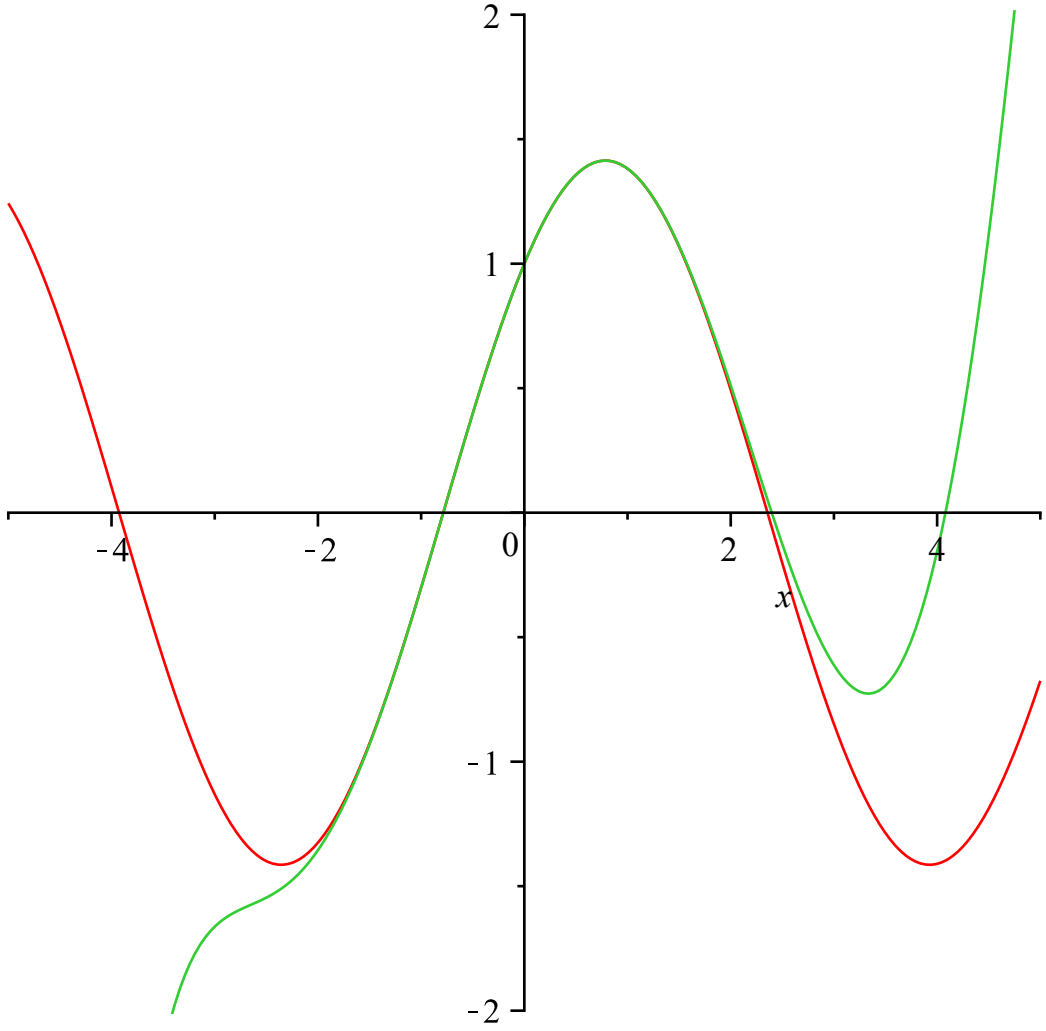


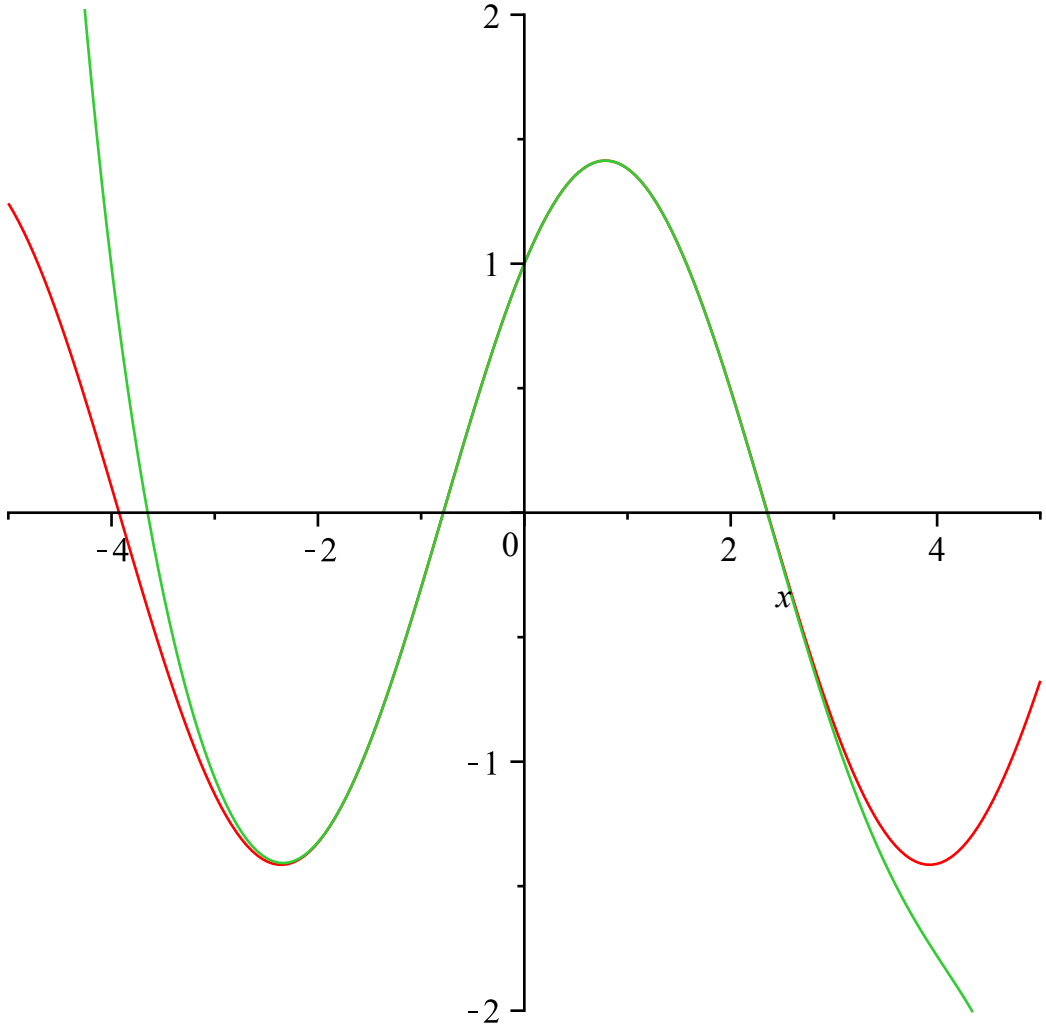
2



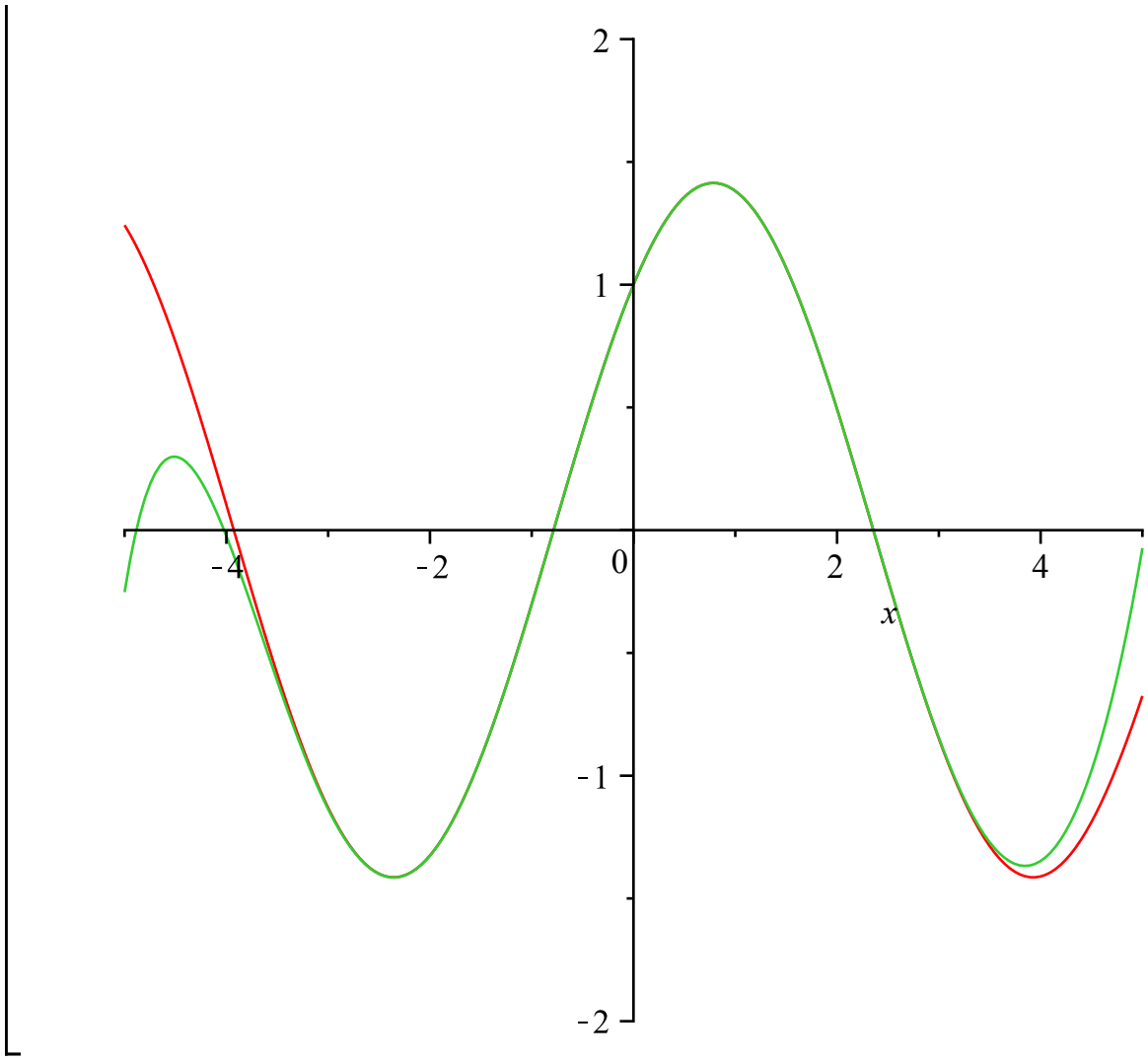
4


2
1
-4
-2
0
2
4
x
-1
-2


2
1
-4
-2
0
2
4
x
-1
-2



10


2
1
-1
-2
-4
-2
0
2
4
x