Kernel: SageMath 9.7

In [1]:
```
#Definir variables
n = var('n')
x = var('x')
```

In [4]:
```
#Ejercicio 1
f(n)=(n^3 + 2*n -1)/(5*n^3 + n**2 -2*n +1)
limit(f(n), n = infinity)
```

Out[4]: 1/5

In [5]:
```
#Ejercicio 2
reset("f")
f(n)=(sqrt(n**2 - n)- sqrt(n**2 + 4*n))
limit(f(n), n= infinity)
```

Out[5]: -5/2

In [7]:
```
#Ejercicio 3
reset("f")
f(n)=(ln(1+n+sqrt(n)) - ln(n))
limit(f(n), n = oo)
```

Out[7]: 0

In [21]:
```
#Ejercicio 4
reset("f")
f(n)=n**3
sum(f(n), n, 0, 1000000)
limit(f(n)/n**4, n = infinity)
```

Out[21]: 0

In [10]:
```
#Ejercicio 5
reset("f")
f(n)=((n**3 - 2*n)/(n**3 + 3*n^2 - 2*n -1))**n
limit(f(n), n = oo)
```

Out[10]: e^(-3)

In [11]:
```
#Ejercicio 6
reset("f")
f(n)= (n+2)/(n**3 - n)
sum(f(n), n, 2, infinity)
```

Out[11]: 5/4

In [19]:

```
#Ejercicio 7
reset("f")
f(n)=1/(n**3 - n)
sum(f(n),n, 2, infinity)
```

Out[19]: 1/4

In [22]:
```
#Ejercicio 8
reset("f")
f(n)= (-1)**n * x^n
sum(f(n), x, 0, oo)
```

Out[22]: (-1)^n*sum(x^n, x, 0, +Infinity)

In [23]:
```
#Ejercicio 9
reset("f")
f(n)= (-1)^n * 4^n * x^(2*n)
sum(f(n), x, 0, infinity)
```

Out[23]: 4^n*(-1)^n*sum(x^(2*n), x, 0, +Infinity)

In [2]:
```
#Ejercicio 10 (taylor(f(x), x, pt, orden max))
reset("f")
f(x)= 1/(1 + x*2)
taylor(f(x), x, 0, 3)
```

Out[2]: -8*x^3 + 4*x^2 - 2*x + 1

In [3]:
```
#Ejercicio 11
g(x)= x*cos(x)
taylor(g(x), x, 0, 3)
```

Out[3]: -1/2*x^3 + x