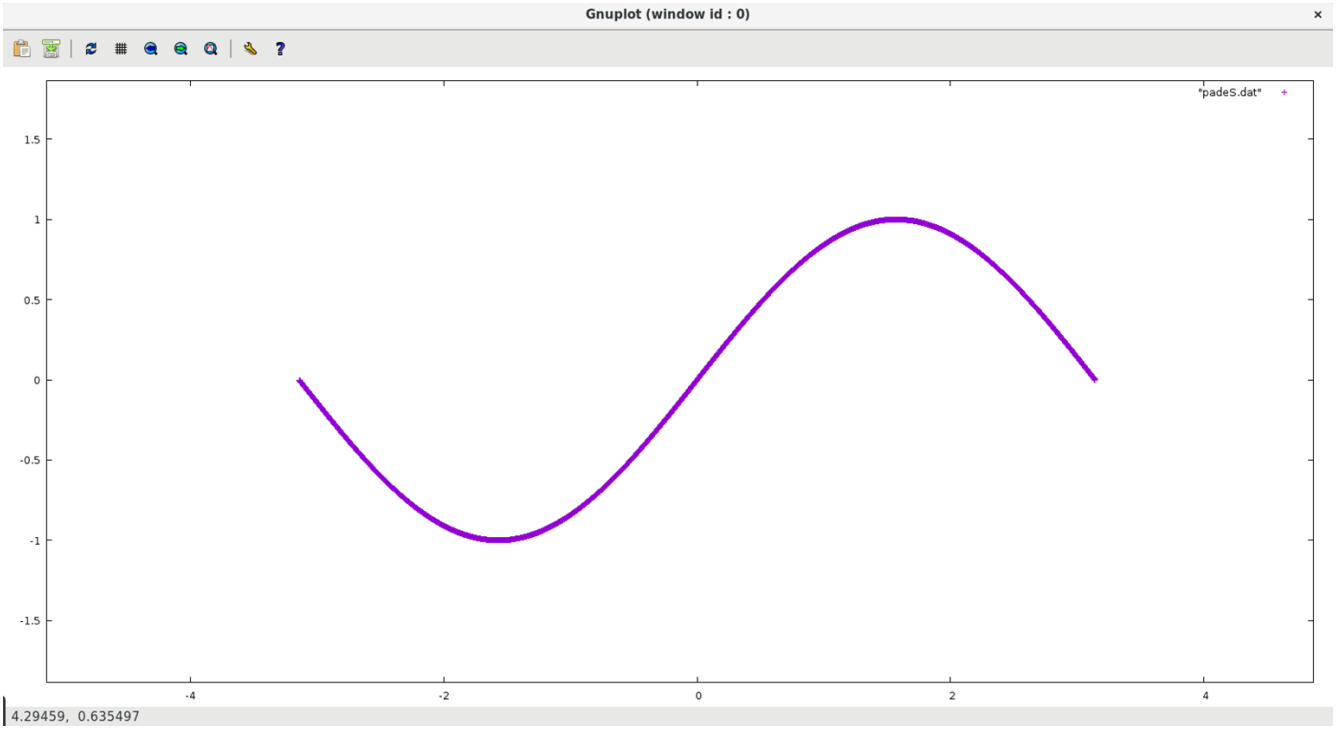
Evaluacion 1

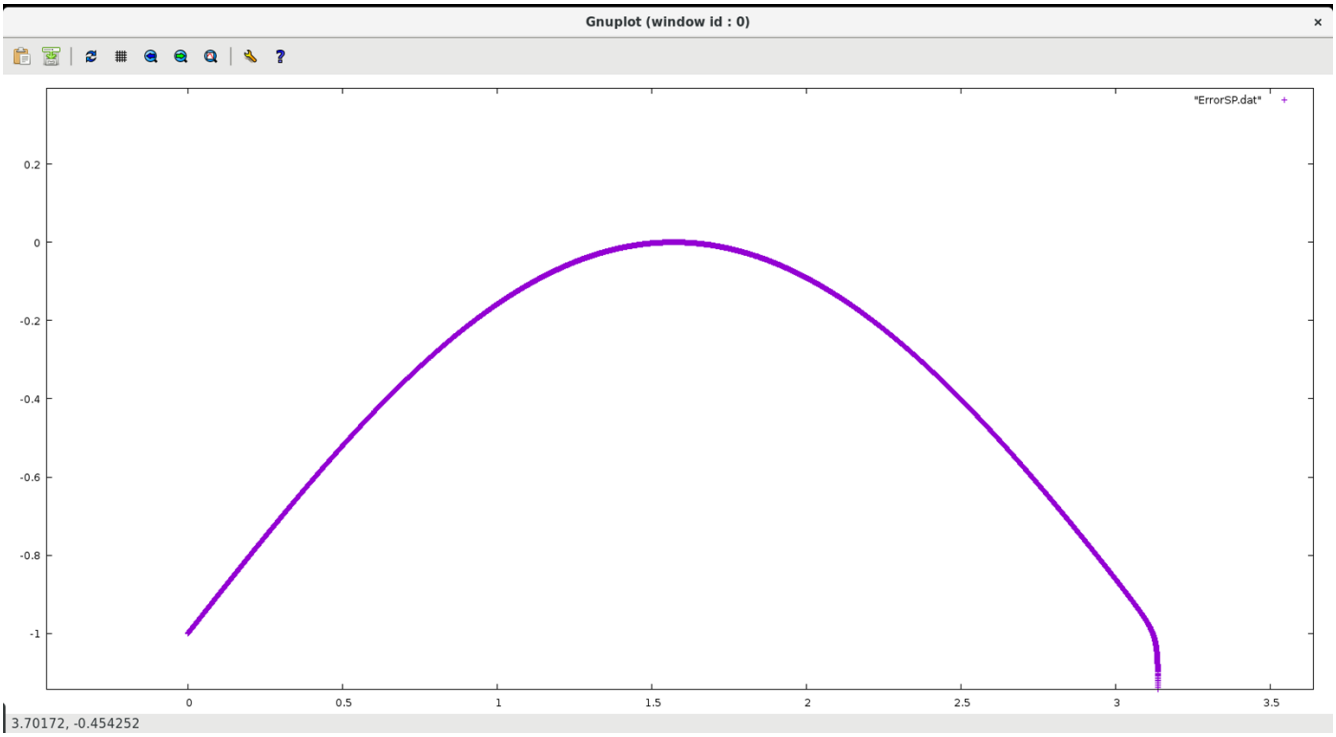
Problema 1
Codigo:

```
PROGRAM pade
        IMPLICIT NONE

         REAL(kind=8),external::SnP
         REAL(kind=8)::Seno_X,y,x,b,ErrorR
         INTEGER::i

        b=0

         OPEN (1,FILE='padeS.dat')
        DO i=-31415926,31415926,1000
          x=i*0.0000001
             Seno_X=Sin(x)
            WRITE(1,*) x,Seno_X,b
          END DO

         WRITE(1,*) ' '
         b=1

         DO i=-31415926,31415926,1000
           x=i*0.0000001
             y=SnP(x)
             WRITE(1,*) x,y,b
         END DO
         CLOSE (1)

         OPEN (2,FILE='ErrorSP.dat')
         DO i=0,31415926,1000
           x=i*0.0000001
            Seno_X=Sin(x)
            y=SnP(x)
            ErrorR=Seno_X-(y/Seno_X)
            Print*, x, ErrorR
            WRITE(2,*) x,ErrorR
         END DO
        CLOSE (2)

        END PROGRAM pade

        FUNCTION SnP(x)

        IMPLICIT NONE

        REAL(kind=8),intent(in)::x
        REAL(kind=8)::SnP,m,n
```

```
m=x-(x**3)*(2363.0/18183.0)+(x**5)*(12671.0/4363920.0)

n=1+(x**2)*(445.0/12122.0)+(x**4)*(601.0/872784.0)+(x**6)*(121.0/16662240.0)

SnP=m/n

END FUNCTION SnP
```



Aproximacion del Seno de x de Pade



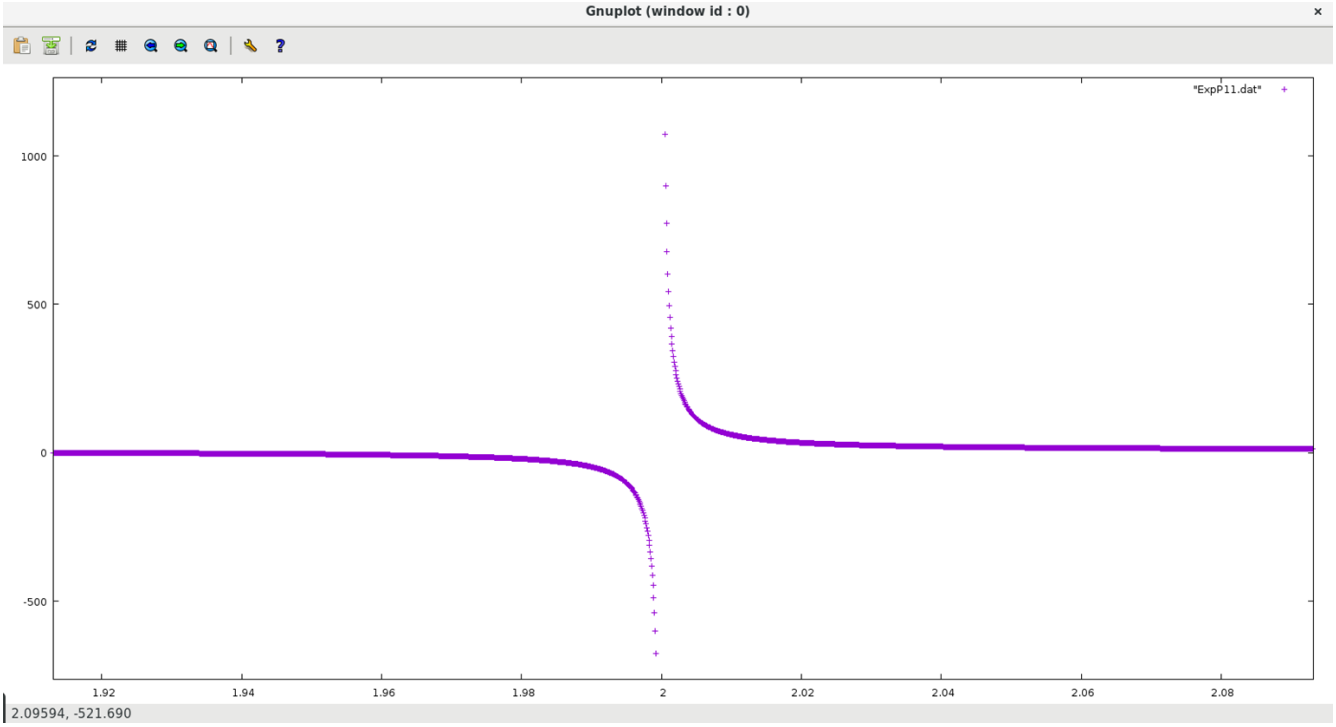
Error de Pade

Problema 2:
Codigo:

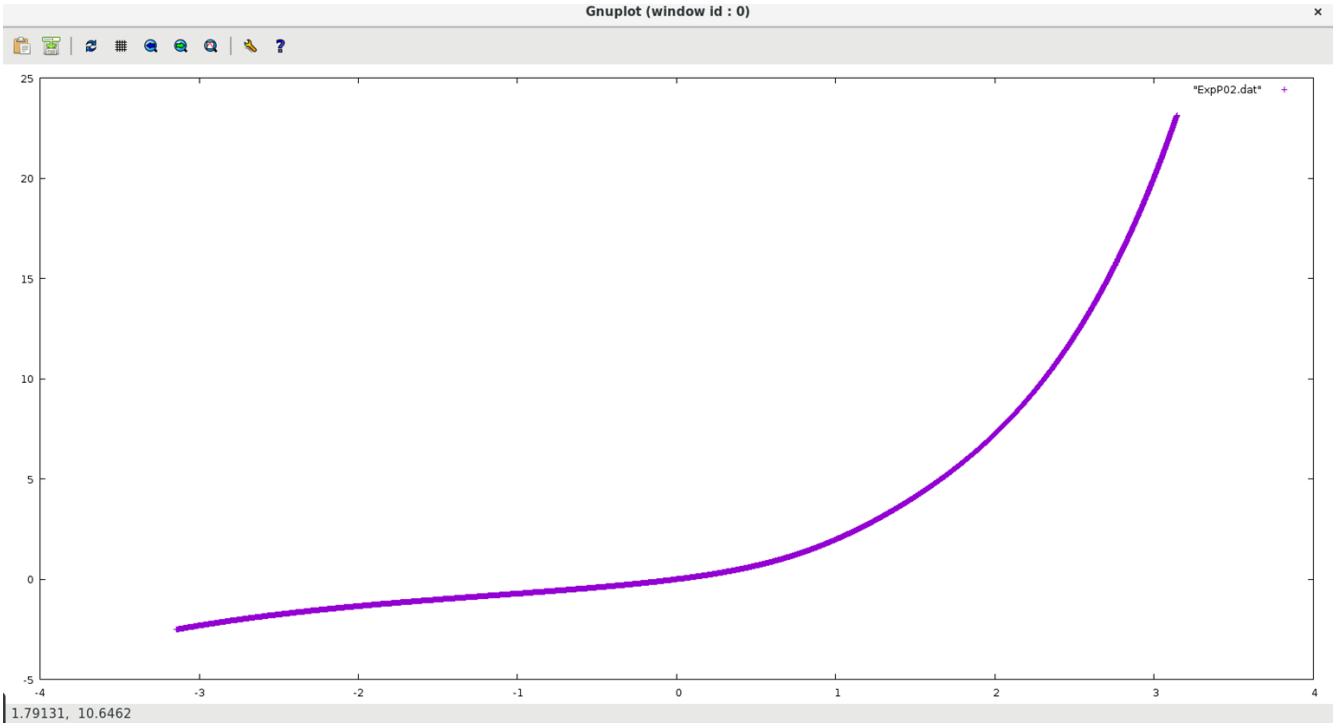
```
PROGRAM pade
IMPLICIT NONE

REAL(kind=8),external::ExpPx,ExpPz,ExpPj
REAL(kind=8)::ExpPaX,y,x,Error,z,j
INTEGER::i

 OPEN (1,FILE='ExpP02.dat')
  DO i=-31415926,31415926,1000
    x=i*0.0000001
     ExpPaX=Exp(x)
     y=ExpPx(x)
      Error=ExpPaX-(y/ExpPaX)
           Print*, x, Error
       WRITE(1,*) x,Error
  END DO
 CLOSE (1)

 OPEN (2,FILE='ExpP11.dat')
  DO i=-31415926,31415926,1000
    z=i*0.0000001
     ExpPaX=Exp(z)
     y=ExpPz(z)
      Error=ExpPaX-(y/ExpPaX)
```

```
      WRITE(2,*) z,Error
  END DO
 CLOSE (2)

 OPEN (3,FILE='ExpP20.dat')
  DO i=-31415926,31415926,1000
    z=i*0.0000001
     ExpPaX=Exp(j)
     y=ExpPj(j)
      Error=ExpPaX-(y/ExpPaX)

      WRITE(3,*) j,Error
  END DO
 CLOSE (3)


END PROGRAM pade
!-----------------------------------------------
FUNCTION ExpPx(x)
IMPLICIT NONE

REAL(kind=8),intent(in)::x
REAL(kind=8)::ExpPx,m,n

m=1.0

n=1-x+(x**2)*(1.0/2.0)

ExpPx=m/n

END FUNCTION ExpPx
!-----------------------------------------------

FUNCTION ExpPz(z)

IMPLICIT NONE

REAL(kind=8),intent(in)::z
REAL(kind=8)::ExpPz,m,n

m=1+z*(1.0/2.0)

n=1-z*(1.0/2.0)

ExpPz=m/n

END FUNCTION ExpPz
!-----------------------------------------------
```

```
FUNCTION ExpPj(j)
 IMPLICIT NONE

REAL(kind=8),intent(in)::j
REAL(kind=8)::ExpPj,m,n

m=1+j+(j**2)*(1.0/2.0)

n=1.0

ExpPj=m/n

END FUNCTION ExpPj
!-------------------------------------------------
```



Error P20


Gnuplot (window id : 0)
"ExpP02.dat"
25
20
15
10
5
0
-5
-4
-3
-2
-1
0
1
2
3
4
1.79131, 10.6462

Error P02