mathtrans

COLLABORATORS

	TITLE : mathtrans		
ACTION	*NAME*	*DATE*	*SIGNATURE*
WRITTEN BY		July 19, 2024	

REVISION HISTORY

NUMBER	DATE	DESCRIPTION	NAME

Contents

Chapter 1

mathtrans

1.1 mathtrans.doc

```
SPAcos()
SPAsin()
SPAtan()
SPCos()
SPCosh()
SPExp()
SPFieee()
SPLog()
SPLog10()
SPPow()
SPSin()
SPSincos()
SPSinh()
SPSqrt()
SPTan()
SPTanh()
SPTieee()
```

1.2 mathtrans.library/SPAcos

NAME

  SPAcos – obtain the arccosine of the floating point number

SYNOPSIS

  fnum2 = SPAcos(fnum1);
                    d0.l
  float fnum2;
  float fnum1;

FUNCTION

  Accepts a floating point number representing the cosine
  of an angle and returns the value of said angle in

```
  radians
```

INPUTS

```
  fnum1 - Motorola fast floating point number
```

RESULT

```
  fnum2 - Motorola fast floating point number
```

BUGS

```
  None
```

SEE ALSO

```
  SPSin
```

1.3 mathtrans.library/SPAsin

NAME

```
  SPAsin - obtain the arcsine of the floating point number
```

SYNOPSIS

```
  fnum2 = SPAsin(fnum1);
                    d0.l
  float fnum2;
  float fnum1;
```

FUNCTION

```
  Accepts a floating point number representing the sine
  of an angle and returns the value of said angle in
  radians
```

INPUTS

```
  fnum1 - Motorola fast floating point number
```

RESULT

```
  fnum2 - Motorola fast floating point number
```

BUGS

```
  None
```

SEE ALSO

```
  SPCos
```

1.4   mathtrans.library/SPAtan

NAME

  SPAtan - obtain the arctangent of the floating point number

SYNOPSIS

  fnum2 = SPAtan(fnum1);
                      d0.l
  float fnum2;
  float fnum1;

FUNCTION

  Accepts a floating point number representing the tangent
  of an angle and returns the value of said angle in
  radians

INPUTS

  fnum1 - Motorola fast floating point number

RESULT

  fnum2 - Motorola fast floating point number

BUGS

  None

SEE ALSO

  SPTan

1.5   mathtrans.library/SPCos

NAME

  SPCos - obtain the cosine of the floating point number

SYNOPSIS

  fnum2 = SPCos(fnum1);
                      d0.l
  float fnum2;
  float fnum1;

FUNCTION

  Accepts a floating point number representing an angle
  in radians and returns the cosine of said angle.

INPUTS

```
  fnum1 - Motorola fast floating point number
```

RESULT

```
  fnum2 - Motorola fast floating point number
```

BUGS

```
  None
```

SEE ALSO

```
  SPAcos
```

1.6 mathtrans.library/SPCosh

NAME

```
  SPCosh - obtain the hyperbolic cosine of the floating point number
```

SYNOPSIS

```
  fnum2 = SPCosh(fnum1);
                        d0.l
  float fnum2;
  float fnum1;
```

FUNCTION

```
  Accepts a floating point number representing an angle
  in radians and returns the hyperbolic cosine of said angle.
```

INPUTS

```
  fnum1 - Motorola fast floating point number
```

RESULT

```
  fnum2 - Motorola fast floating point number
```

BUGS

```
  None
```

SEE ALSO

```
  SPSinh
```

1.7 mathtrans.library/SPExp

```
NAME

   SPExp - obtain the exponential (e**X) of the floating point number

SYNOPSIS

   fnum2 = SPExp(fnum1);
                      d0.l
   float fnum2;
   float fnum1;

FUNCTION

   Accepts a floating point number and returns the value
   of e raised to the fnum1 power

INPUTS

   fnum1 - Motorola fast floating point number

RESULT

   fnum2 - Motorola fast floating point number

BUGS

   None

SEE ALSO

   SPLog
```

1.8 mathtrans.library/SPFieee

```
NAME

   SPFieee - convert single precision ieee to FFP number

SYNOPSIS

   fnum = SPFieee(ieeenum);
                      d0.l
   float fnum;
   float ieeenum;

FUNCTION

   Accepts a standard single precision format
   returns the same number, converted to Motorola
   fast floating point number

INPUTS

   ieeenum - IEEE Single Precision Floating Point
```

RESULT

  fnum – Motorola fast floating point number

BUGS

  None

SEE ALSO

  SPTieee

1.9   mathtrans.library/SPLog

NAME

  SPLog – obtain the natural logarithm of the floating point number

SYNOPSIS

```
fnum2 = SPLog(fnum1);
                    d0.l
float fnum2;
float fnum1;
```

FUNCTION

  Accepts a floating point number and returns the natural
  logarithem (base e) of said number

INPUTS

  fnum1 – Motorola fast floating point number

RESULT

  fnum2 – Motorola fast floating point number

BUGS

  None

SEE ALSO

  SPExp

1.10   mathtrans.library/SPLog10

NAME

  SPLog10 – obtain the naperian logarithm(base 10) of the

```
      floating point number
```

SYNOPSIS

```
  fnum2 = SPLog10(fnum1);
                        d0.l
  float fnum2;
  float fnum1;
```

FUNCTION

```
  Accepts a floating point number and returns the naperian
  logarithm (base 10) of said number
```

INPUTS

```
  fnum1 - Motorola fast floating point number
```

RESULT

```
  fnum2 - Motorola fast floating point number
```

BUGS

```
  None
```

SEE ALSO

```
  SPExp, SpLog
```

1.11   mathtrans.library/SPPow

NAME

```
  SPPow - raise a number to a power
```

SYNOPSIS

```
  result = SPPow(fnum1, fnum2);
                    d1.l    d0.l
  float fnum1, fnum2;
  float result;
```

FUNCTION

```
  Accepts two floating point numbers and returns the
  result of fnum2 raised to the fnum1 power
```

INPUTS

```
  fnum1 - Motorola fast floating point number
  fnum2 - Motorola fast floating point number
```

RESULT

```
  result - Motorola fast floating point number
```

BUGS

```
  None
```

SEE ALSO

```
  SPExp, SPLog
```

1.12   mathtrans.library/SPSin

NAME

```
  SPSin - obtain the sine of the floating point number
```

SYNOPSIS

```
  fnum2 = SPSin(fnum1);
                    d0.l
  float fnum2;
  float fnum1;
```

FUNCTION

```
  Accepts a floating point number representing an angle
  in radians and returns the sine of said angle.
```

INPUTS

```
  fnum1 - Motorola fast floating point number
```

RESULT

```
  fnum2 - Motorola fast floating point number
```

BUGS

```
  None
```

SEE ALSO

```
  SPAsin
```

1.13   mathtrans.library/SPSincos

NAME

```
  SPSincos - obtain the sine and cosine of a number
```

SYNOPSIS

```
  fnum3 = SPSincos(pfnum2, fnum1);
                        d1.l,   d0.l
  float *pfnum2;
  float fnum1;
  float fnum3;
```

FUNCTION

  Accepts a floating point number (fnum1) representing
  an angle in radians and a pointer to another floating
  point number (pfnum2). It computes the cosine and places it in
  *pfnum2. It computes the sine and returns it as a result.

INPUTS

  fnum1 - Motorola fast floating point number
  pfnum2 - pointer to Motorola fast floating point number

RESULT

  *pfnum2 - Motorola fast floating point number (cosine)
  fnum3 - Motorola fast floating point number (sine)

BUGS

  None

SEE ALSO

  SPSin, SPCos

1.14   mathtrans.library/SPSinh

NAME

  SPSinh - obtain the hyperbolic sine of the floating point number

SYNOPSIS

```
  fnum2 = SPSinh(fnum1);
                    d0.l
  float fnum2;
  float fnum1;
```

FUNCTION

  Accepts a floating point number representing an angle
  in radians and returns the hyperbolic sine of said angle.

INPUTS

  fnum1 - Motorola fast floating point number

RESULT

```
fnum2 - Motorola fast floating point number
```

BUGS

```
None
```

SEE ALSO

```
SPCosh
```

1.15   mathtrans.library/SPSqrt

NAME

```
SPSqrt - obtain the square root of the floating point number
```

SYNOPSIS

```
fnum2 = SPSqrt(fnum1);
                  d0.l
float fnum2;
float fnum1;
```

FUNCTION

```
Accepts a floating point number and returns the square toot
of said number
```

INPUTS

```
fnum1 - Motorola fast floating point number
```

RESULT

```
fnum2 - Motorola fast floating point number
```

BUGS

```
None
```

SEE ALSO

```
SPPow, SPMul
```

1.16   mathtrans.library/SPTan

NAME

```
SPTan - obtain the tangent of the floating point number
```

SYNOPSIS

```
fnum2 = SPTan(fnum1);
                     d0.l
float fnum2;
float fnum1;
```

FUNCTION

  Accepts a floating point number representing an angle
  in radians and returns the tangent of said angle.

INPUTS

  fnum1 – Motorola fast floating point number

RESULT

  fnum2 – Motorola fast floating point number

BUGS

  None

SEE ALSO

  SPAtan

1.17   mathtrans.library/SPTanh

NAME

  SPTanh – obtain the hyperbolic tangent of the floating point number

SYNOPSIS

```
fnum2 = SPTanh(fnum1);
                      d0.l
float fnum2;
float fnum1;
```

FUNCTION

  Accepts a floating point number representing an angle
  in radians and returns the hyperbolic tangent of said angle.

INPUTS

  fnum1 – Motorola fast floating point number

RESULT

  fnum2 – Motorola fast floating point number

BUGS

  None

SEE ALSO

  SPSinh, SPCosh

1.18   mathtrans.library/SPTieee

NAME

  SPTieee – convert FFP number to single precision ieee

SYNOPSIS

```
ieeenum = SPTieee(fnum);
                    d0.l
float ieeenum;
float fnum;
```

FUNCTION

      Accepts a Motorola fast floating point number and
      returns the same number, converted into IEEE
      standard single precision format

INPUTS

  fnum – Motorola fast floating point number

RESULT

  ieeenum – IEEE Single Precision Floating Point

BUGS

  None

SEE ALSO

  SPFieee