

mathtrans

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REVISION HISTORY

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Chapter 1

mathtrans

1.1 mathtrans.doc

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

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);  
                                d0.1  
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);  
                                d0.1  
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 logarithm (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);  
                dl.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);
```

```
                                d0.1
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);
                                d0.1
float fnum2;
float fnum1;
```

FUNCTION

Accepts a floating point number and returns the square root 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);  
                                d0.1  
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);  
                                d0.1  
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